
CHAPTER 7

THE PERSIAN GULF

Executive Summary

Among the slowest to join the world's Interneted community have been the nations of the Persian Gulf. These nine petrochemically-endowed countries range from tiny Bahrain to much larger Iran and Saudi Arabia. Per capita GDP varies from the wealthy United Arab Emirates to poor Yemen (although not on the Persian Gulf, Yemen is included to complete the Arabian Peninsula). These countries, although often viewed as homogeneous by the West, are in fact very different from one another and represent an interesting cross-section of the Islamic world located at important geostrategic cross-roads where East meets West, North transitions to South, and the bulk of the world's oil originates.

In January 1994, the Persian Gulf had no TCP/IP hosts when the rest of the world had over 2.2 million. By January 1995, Kuwait had modest, and Iran fairly minimal, connectivity. Now all but Iraq are connected, some with impressive growth percentages. But both the state of the Internet and the reasons for its presence and development vary greatly within the region.

• Bahrain

- The country is a small, island city-state, the development of which was based on oil wealth, but the sustenance of which will depend upon services provision.
- Bahrain is a proxy outlet for neighboring Saudi Arabia; for instance, in the provision of Internet services while the Kingdom considered its position, and the availability of alcohol.
- The country has a sizable and very poor Shi'ite minority which has engaged in terrorism and acts of civil disturbance over the past several years, complicating the government's development plans. There are accusations that the disturbances are supported and encouraged by Iran. The presence of the U.S. Navy's FIFTH Fleet headquarters on the island makes both of these issues of considerable concern to the U.S. government.
- Batelco is the monopoly telecommunications company and sole ISP. *inet* opened for business in December 1995 and has grown to host more than 46,000 subscribers. The initiation of Internet services in Bahrain was essentially a business decision.
- No concerns have been publicly raised concerning the Internet. Unlike other countries in the region, which have taken steps to limit access to objectionable Worldwide Web sites, Batelco offers links to CyberSafe, NetNanny, and other programs designed to limit a user's access to a general list (mainly based on the availability of pornography) and specified Web sites. The maintenance of Islamic morals in cyberspace is based on the same do-it-yourself philosophy as are the availability of alcoholic beverages and un-Islamic forms of entertainment.
- **Iran** The Internet dimensions for Iran are described in Table 58 and depicted in Figure 31.
 - Iran occupies the most important and dominating geostrategic position in the region, owning the entire eastern coast of the Persian Gulf and the Strait of Hormuz, as well as bordering Russia and several former Soviet Central Asian republics on the north and Afghanistan and Pakistan to the east. The country thus potentially dominates the Gulf, has a strategic position on the North Arabian Sea, and has a considerable stake in developments on the Caspian Sea.

Dimension	Level	Explanation
Pervasiveness	(1) <i>Experimental</i>	Although the Internet has been available to some extent in Iran for more than three years, the level of usage remains less than one in a thousand. Internet usage has extended beyond a core of computing professionals, but is insufficiently available to the general public for widespread use.
Geographic Dispersion	(2) <i>Moderately Dispersed</i>	Almost half of the country's provincial capitals, as well as the nation's capital, have full-time links to the Internet via one of two international connections from two Tehran-based organizations.
Sectoral Absorption	(1) <i>Rare</i>	Although the most important universities have full-time Internet connections, few or no schools and very few organizations in other sectors are connected.
Connectivity Infrastructure	(1)	There are 64 Kbps dedicated IP connections to ten cities and two international satellite links with a total bandwidth of less than 200 Kbps. There are no Internet exchanges in Iran. Access to the Internet is via dial-up or 64 Kbps leased line.
Organizational Infrastructure	(2) <i>Controlled</i>	There are only a few ISPs in Iran, and the position of the non-government providers appears tenuous. The market is closely controlled by government regulation.
Sophistication of Use	(1) <i>Minimal</i>	Development of Internet expertise has been hampered by the lack of a sophisticated clientele and the poor condition of the infrastructure. Use of the Internet is very basic.

Table 58. Internet Dimensions for Iran

- Although Iran has the second-largest oil reserves in the world, it has been impeded in its efforts to benefit from this by, in sequence, poor investment choices and corruption, a revolution, a lack of investment capital, and various Western embargoes of varying efficacy. The large and rapidly-growing population dilutes the impact of the country's natural wealth.
- The post-revolution Islamic governments have emphasized infrastructure development as an issue of basic social equity. The telecommunications infrastructure has correspondingly been developed rapidly. Universal access is considered a basic necessity.
- Iran was the first country in the region to join BITNET, in 1992, and the second to offer public Internet access (albeit the first to have a full-time IP connection), although the degree of availability of that access has since been variable. The government has displayed a great degree of ambivalence about the Internet, with correspondingly irregular shifts in policy.

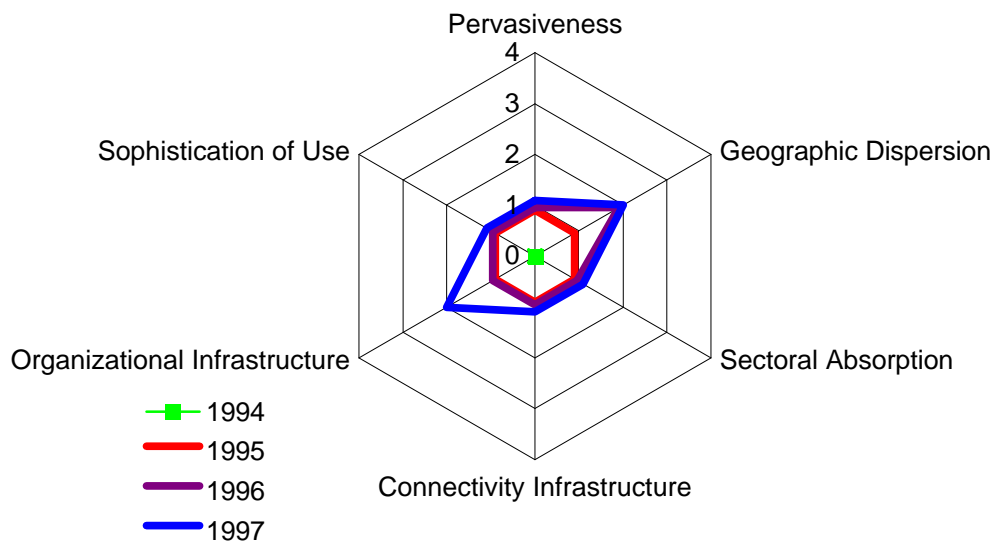


Figure 31. Internet Dimensions for Iran

- The development of the Internet is ham-strung by the same confusion in government decision-making that hampers almost all other government functions. The revolutionary government has yet to develop a coherent policy due to the intransigence of its various constituencies, making long-term investments a gamble.
- Public access through commercial services closely followed the establishment of a full-time IP link in 1994, but has not developed consistently due to the vagaries of government policy. There was a single slow (9.6 Kbps) link to the University of Vienna until late 1997, when a new 128 Kbps satellite link was opened between Tehran and Milan, Italy. There is also a satellite link with Kuwait.
- Although commercial provision of value-added services is legal and officially encouraged, the government telecommunications sector (Telecommunications and Data Communications Companies of Iran) work behind the scenes to foil private projects while pursuing their own projects. The Data Communications Company of Iran was until recently dedicated to the further development of an antiquated, although only recently purchased, X.25 packet-switched network.
- **Iraq**
 - The country is a basket case in every respect. What hasn't been destroyed by war or debilitated by Western sanctions has been in some way ruined by government policy or the actions of Saddam Hussein and his family.
 - The government aggressively asserts its position as the sole source of information for the Iraqi people, resulting in a general lack of awareness within the country that Iraq lost the war with the Western coalition in early 1991. Modems are illegal, international telephone connections are monitored, and the press is government-owned. Connecting to the Internet is illegal,

although the general lack of telephone lines and their poor quality almost makes this restriction moot.

- There was an interest in the 1980s and early 1990s in connecting to the Internet and other foreign data sources. These have been suppressed in the post-war environment. At least some academics desire Internet access, and Saddam's eldest son has editorialized in favor of re-joining the rest of the world, but there are no signs that the government's policy might change. Even if it were to change, there is little prospect of it being able to afford (economically or politically) the international access.
- **Kuwait**
 - Kuwait is a small but wealthy country that borders Iraq but has close ties with Iran. Although the 1990 invasion by Iraq witnessed extensive destruction, the country has been largely rebuilt, mostly to state-of-the-art standards.
 - The second country to offer public Internet service, Kuwait's network and subscriber base have grown rapidly, largely unrestrained by problems that arose (or were generated) in the region's other countries.
 - Although there are currently two ISPs, both are subsidiaries of the same company, a partner of the government. Service provision may be liberalized in the near future. Through the Gulfnet enterprise, which reaches into Iran and Saudi Arabia, and other initiatives, such as ZakSat, Kuwait aspires to becoming a regional telecommunications hub.
 - Kuwait is the only country in the region, and perhaps in the entire Islamic world, to offer ubiquitous, free Internet access to its university students.
- **Oman**
 - "Circumspect" best describes this country's development philosophy and relationship with the world. Such wealth as the country possesses has been carefully and purposefully invested over the past 20 years to produce a modern, developed country without fanfare or even notice. This former regional power has cultivated and been accorded a reputation for moderation.
 - The United States depends heavily upon Oman for its ability to operate forces, especially aviation assets, in proximity to Iran. Both due to its role as honest broker in the region and the diminution of the original threat (the feared Soviet invasion of Iran in 1980), the continued ability of U.S. forces to stage from Oman is uncertain. The U.S. government has been unable to build a reliable base of support in the country, despite sometimes quite close working relationships. Oman's position across the Strait of Hormuz from Iran makes the cooperation of this country valuable.
 - Alone among the countries of the region, Oman's decision to introduce Internet services was the result of a larger plan, the General Telecommunications Organization's (GTO) plan for the year 2000. The value of information is recognized in this plan, which aims to provide Omani public and private entities with whatever information they need, from whatever source, whenever needed.
 - Internet service commenced in Oman in August 1996, and has proven popular well beyond the GTO's expectations. Use of the Internet is dominated by commercial organizations.

- **Qatar**

- Although significantly larger than neighboring Bahrain, Qatar is the least populous country in the region, with most of its population concentrated in the capital and the rest proximal to sites related to petroleum exploitation. Fewer than one-third of the country's population are native Qataris, the remainder being long- or short-term *gastarbeiter*.
- Qatar has the most modern telecommunications network in the region, and has nearly 50 percent excess capacity. The state monopoly telecommunications company, Q-Tel, is the sole ISP. However, the government has taken the first, tentative steps toward privatization. On the other hand, it is not clear that privatization will lead to competition.
- A unique application of Internet technology in Qatar was the creation of a geophysical information system that is accessible over an IP-based intranet and used to facilitate the country's continued development.
- Internet services were introduced in mid-1997, and have been very successful. Public and private use of the Internet appear to be roughly equal. However, the academic sector lags its regional counterparts in employing the Internet. The university has a domain name reserved, but not a single Internet link.
- Qatar is the only country in the region to have disbanded its censorship organization and declared itself an information-open zone. With no internal or external dissent, a homogeneous citizenry, and a benign foreign policy, the government claims that it has no security concerns. The one Internet-related concern, pornography, is mitigated with a firewall.

- **Saudi Arabia**

- The largest country in the region also dominates local security discussions. Saudi Arabia is also of great importance to the United States due to the U.S. reliance upon Saudi oil for the functioning of the American economy.
- Saudi society is the most conservative in the region, although the ruling elite have been accused of hypocrisy on this score. The government is intent upon protecting the country from immoral foreign influences as well as insulating itself from dissent originating with exiled Saudis.
- There is as yet no public access to the Internet in Saudi Arabia, although those who can afford it have accounts in other countries, especially Bahrain. Public Internet service was approved in April 1997, but the modalities have yet to be worked out. It appears that the most significant impediment to the diffusion of the Internet in Saudi Arabia is corporate greed.
- There is currently an IP link via satellite between Saudi Arabia and the United States, which was originally set up for telemedicine applications. Internet access is presently limited to a few government and academic institutions.
- The Saudi government initiated the most extensive examination of the applications and implications of the Internet of any country in the region. The resultant review process took about two years, and finally recommended that the country's Internet connection be managed from a single point and that a firewall be used to interdict Saudi citizens' access to material deemed inappropriate by the government.

- **United Arab Emirates**

- The United Arab Emirates (UAE) have developed the region's most extensive Internet service and most ubiquitous control and monitoring scheme.
- From the introduction of Emirnet service in August 1995, the network has grown to support almost 90,000 subscribers from every Emirate. The subscriber base could easily double in the next 12-18 months.
- Although the commercial sector is the driving force behind the Internet, government participation is extensive, as is that by the various universities.
- Etisalat has established the region's only successful proxy server scheme, although at significant expense. All international Internet activity is filtered through and moderated by a few government servers.
- The UAE also featured the region's most explicit public discussion of the potential hazards of Internet use. However, even the major force behind calls to limit and/or control Internet access admitted that "the nation needs to keep up with the emerging technology of the Internet."²¹⁵

- **Yemen**

- Yemen overlooks the Eastern side of the strategic Bab el-Mandeb, the strait separating the Gulf of Oman from the Red Sea. Along with the Strait of Hormuz, the Suez Canal, and the Strait of Gibraltar, it is a significant and vulnerable choke point on the West's oil supply route.
- The former countries of the Yemen Arab Republic and Democratic Republic of Yemen, the latter influenced by and supportive of Soviet regional policy, merged in 1992 but almost split in the civil war of 1994. With politicians from the north now firmly in control, this undeveloped country is attempting to get back on the development track.
- While there is apparently a great deal of enthusiasm for the Internet in Yemen, there is neither the capital nor expertise to effectively join the "information superhighway." Yemen does, however, host the region's only network supporting women's studies.
- Internet services are the exclusive province of the state's long-distance telecommunications joint venture. Prices have been set very high, probably to speed investment recovery but effectively precluding mass participation.

Table 59 summarizes the Internet dimensions for the remainder of the Persian Gulf countries. The dimensions for each country are depicted in Figure 32.

All nine countries are characterized by strong forms of state control, including over the content and distribution of information. The exact forms of control vary from country to country, usually deriving from military, religious authority, hereditary monarchies, or other oligarchic sources. More so than in many parts of the world, government control of telecommunications continues via monopolistic providers.

²¹⁵"UAE Authorities Warn of Possible Hazards From Internet," *COMPASS Newswire* (15 January 1997).

Internet Dimensions	Levels							
	Bahrain	Iraq	Kuwait	Oman	Qatar	Saudi	UAE	Yemen
Pervasiveness	2	0	3	3	3	1	4	1
Geographic Dispersion	1	0	1	1	1	1	3	1
Sectoral Absorption	2	0	2	2	1	1	2	1
Connectivity Infrastructure	1	0	2	1	1	1	1	1
Organizational Infrastructure	1	0	1	1	1	1	1	1
Sophistication of Use	2	0	2	2	2	1	2	1

Table 59. Internet Dimensions for the Persian Gulf (less Iran)

This does not, however, mean that no change can take place. But there must be constituencies within the most important institutions of these societies acting as advocates of change. In many of the countries worldwide that were early to embrace the Internet, academics and other non-governmental, non-commercial organizations led the way, and the governments of those countries either supported or at least did not oppose it. In the Persian Gulf, and many OIC nations more generally, when the Internet was in its early stages there were no constituencies—certainly not the academics—powerful enough to make a case for its acceptance against the conservative concerns or lack of interest within the powerful national institutions.

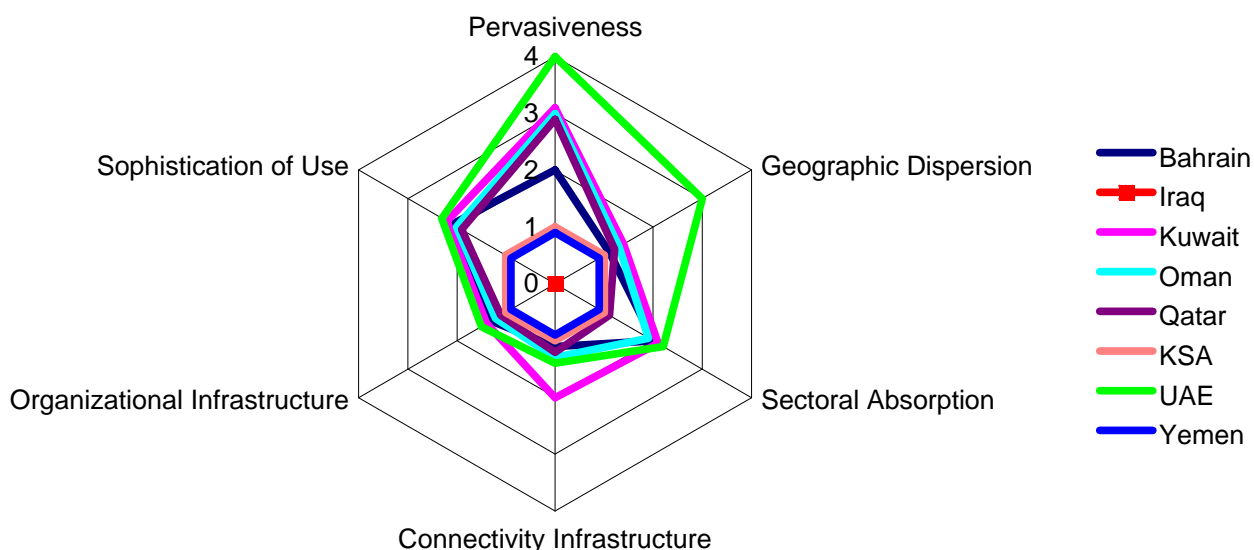


Figure 32. Internet Dimensions for the Persian Gulf (less Iran)

National security concerns in these countries extend beyond the traditional definition of military threats from foreign countries. In effect they include anything that is a threat to the ruling institutions and their interests, such as their claims to the right to rule (e.g., as defenders of Islam and Arab cultural values) and their financial interests. Others include fears that international networks will be used by terrorists, the potential vulnerability of businesses becoming dependent upon

information accessible via the Internet and the security of business communications, the spreading of propaganda (false or otherwise) by political opposition groups in exile, and foreign information warfare and intelligence operations. The fact that all of the polygons depicting the Internet dimensions in the Persian Gulf countries (Figure 32) are skewed to the upper right side of the diagram reinforces the lack of competition in Internet services in the region. The relative lack of physical Internet infrastructure and/or the lack of sophistication in using the Internet are caused at least in part by strong government controls. The rapid growth in pervasiveness of the Internet is a testament to the popularity of the service, government restrictions notwithstanding.

The constituencies for these negative perceptions of the Internet often include the military and internal security services, the Islamic religious ministries and clergy, and powerful families concerned with everything from the moral corruption of the nation's youth to threats against their privileged positions, although these players are not always uniformly critical.

With the growing worldwide spread and increasing commercialization of the Internet, other more favorable constituencies have arisen which seek its acceptance. These typically include younger members of key families (many of whom first used the Internet at foreign educational institutions), domestic businesses recognizing the need to operate internationally, foreign companies in-country, academics who have had exposure to global networking while they were abroad, and parts of government (e.g., PTTs) who seek their own opportunities. These have become important enough to warrant serious consideration, often resulting in committees of mixed players being tasked to look into the benefits and risks and to make recommendations to the governments. This was done most extensively and explicitly in Saudi Arabia. The net result has generally been cautious pro-Internet recommendations, arguing that the risks can be acceptably, albeit imperfectly, controlled by firewalls and proxy servers.

Introduction to the Region

The eight countries bordering the Persian Gulf—Bahrain, Iran, Iraq, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates (UAE)—and Yemen, which occupies the southwestern corner of the Arabian Peninsula, each developed at different times in history to various degrees from differing roots. The single apparently unifying characteristic beyond geography—adherence to the Islamic faith—has instead been a source of tension, since the only non-Arab country in the region, Iran, also adheres to the Shi'ite sect of Islam, whereas the other countries are predominantly and/or officially adherents of the Sunni tradition. Shi'ite minorities in the other Persian Gulf countries have been a significant source of instability in the region. Figure 33 depicts the Persian Gulf region.



Figure 33. Map of the Persian Gulf Region

To the north and east lie Iraq, impoverished and disconnected, and Iran, geographically and demographically one of the largest Islamic countries, but with a Persian culture and historical outlook. All of the region's economies are a mix of state planning with generally private ownership of manufacturing and other commercial enterprises. The region includes one of the world's richest countries—Saudi Arabia, and one of the world's poorest, Yemen. Table 60 summarizes some of the salient characteristics of these countries.

Table 60. Characteristics of Persian Gulf Countries

		Bahrain	Iran	Iraq	Kuwait	Oman	Qatar	Saudi Arabia	UAE	Yemen
Population (1995)	Total (M)	0.58	67.28	20.45	1.69	2.16	0.55	17.88	2.38	15.13
	Density (per km ²)	879	41	47	70	8	48	7	32	80
GDP (1994)	Total (\$B)	4.9	57.6	48.7	24.3	11.3	7.4	120.2	36.2	18.4
	Per capita (\$)	8,857	876	2,691	14,715	5,415	3,730	6,868	16,247	1262
Public Telephone Network (1995)	Total (000)	140.9	5,090.4	675 ²¹⁶	382.3	169.9	122.7	1,719.4	672.3	187.0
	Teledensity	24.23	7.57	3.3	22.61	7.87	22.27	9.62	28.28	1.24
Cellular Networks (1995)	Growth since 1990	8.4%	18.3%	na	2.9%	10.2%	5.9%	6.9%	11.1%	8.5%
	Analog Subscribers	19,600	none	none	72,000	8,052	4,243	16,008	87,495	8250
	Digital Subscribers	8,000	9,200	none	45,600	none ²¹⁷	14,226	none ²¹⁸	41,500	none

The countries of the Persian Gulf have remained relatively isolated since the end of World War I, due in part to geography, their lack of perceived strategic relevance, and conservative nature. The discovery of oil spurred development without substantially altering either the isolation or the form of government of these countries. Yemen has existed in relative isolation for hundreds of years,

²¹⁶ 1990 estimate.

²¹⁷ A digital cellular telephone network was commissioned in 1996.

²¹⁸ A digital cellular telephone network was commissioned in 1997.

only recently reappearing as a regional force following the collapse of the (Communist) People's Democratic Republic of Yemen (South Yemen) and the subsequent reunification of North and South Yemen under the leadership of the northern government. Iran and Iraq, on the other hand, were relatively open and engaged in regional affairs during the 1970s, although the Iranian monarchy was under increasing pressure. In 1979, the Shah of Iran was ousted and an Islamic government gradually consolidated its position. During the instability, Iraq attacked, embarking on an eight-year war between the two countries that ended inconclusively. During the 1980s, the new Islamic regime in Iran focused its attention inward while the United States attempted to isolate the Tehran government. Following Iraq's invasion of Kuwait in 1990, a policy of "dual containment" was initiated, whereby the United States, through a combination of multi-lateral and unilateral initiatives, has attempted to isolate both countries.

All of these countries have strong central governments, of which only Iran's and Yemen's can claim to have been truly elected (although they may have fallen short of the American standards for "substantially free and fair elections"); six of the remaining seven countries are hereditary monarchies. Iraq is a military dictatorship. Telecommunications services, and indeed all public services, in these countries are closely controlled by each state, which generally owns all of or a significant stake in the monopoly public telecommunications company.

Iran and Iraq traditionally enjoyed good telecommunications connections with the rest of the world. Iran's connections have increased and improved while Iraq's were substantially destroyed during Desert Storm. Communications with the other Gulf countries, however, were difficult until only recently, relying on a few terrestrial links and satellite communications. The recent completion of the Fiber Optic Gulf (FOG) and SEA-ME-WE 2 submarine fiber optic cable networks have now provided most of the countries in the region, with the notable exception of Yemen, high-bandwidth terrestrial communications links with the rest of the world. These systems are of potentially great importance to computer networks, as they do not suffer from the latency to which satellite links are subject.

There are no comprehensive trade, defense, or other relationships or pacts among the nine countries of the Persian Gulf region. These countries all belong to the Organization of the Islamic Conference (OIC), along with 45 other members, but the OIC has had little direct involvement in telecommunications development issues. An earlier OIC-wide initiative to establish a comprehensive computer network to provide communications and database services to OIC member nations (OICIS-NET) has stalled,²¹⁹ and will likely be supplanted by local efforts to provide similar services (to the extent they are needed and/or wanted) via the Internet. Six of the countries of the Arabian Peninsula (Yemen is excluded) belong to the Gulf Cooperation Council (GCC), which encompasses trade, diplomatic, defense, and development agreements. The GCC only recently established a working group dedicated to telecommunications issues, and this group has concentrated on technical standards and tariff issues rather than development policy.

The geographically important Persian Gulf region, encompassing as it does vast oil reserves of critical importance to the economy and security of the United States and many other countries, is by no means homogeneous, geographically, economically, politically, demographically, or technologically. However, the rapid development and diffusion of modern information technology (IT), especially the Internet, at least creates the potential for a narrowing of the technological gap

²¹⁹For an overview of the objectives and progress of the OICIS-NET project, see Ann Danowitz, *Organization of the Islamic Conference Information Systems Network II* (Tucson, AZ: University of Arizona, April 1996).

within the region and between these countries and those of the OECD. The Internet is now present to at least some degree in eight of the region's nine countries (Table 61), but with important differences between the nature of that presence in each country. On the other hand, there are commonalities in the concerns about the Internet expressed by the regional governments and some similarities in the adoption of methods that attempt to maintain centralized control over the use of the Internet.

Country	TLD	1/94	7/94	1/95	7/95	1/96	7/96	1/97	7/97
Bahrain	.bh	0	0	0	0	142	236	841	896
Iran	.ir	0	4	18	224	271	307	285	>285 ²²¹
Iraq	.iq	0	0	0	0	0	0	0	0
Kuwait	.kw	138	297	220	776	1233	1963	2920	3555
Oman	.om	0	0	0	0	0	0	5	>5 ²²²
Qatar	.qa	0	0	0	0	0	0	21	345
KSA	.sa	0	1	2	18	27	275	>275 ²²³	293
UAE	.ae	0	0	0	11	365	469	1802	1994
Yemen	.ye	0	0	0	0	0	0	2	2
Region		138	302	240	1029	2038	3250	>6149	>7193
World (millions)		2.22	3.21	4.85	6.64	9.47	12.88	16.15	19.54

²²⁰The table presents the number of Internet host computers (i.e., computers listed in the Domain Name System with unique addresses) detected by Network Wizards (<<http://www.nw.com>>) during their semi-annual Internet surveys over the past four years. These surveys are only estimates of the minimum extent of the Internet. For the Persian Gulf, the numbers of hosts reported by each survey are believed to approximate the actual number of hosts, except where discrepancies have been noted. The purpose of the chart is to convey a sense of the Internet's recent growth in the region, rather than the specific numbers of computers connected.

²²¹Due to a change in which Iran's intranet is connected to the worldwide Internet, it is no longer possible to determine the number of hosts connected within the country.

²²²Due to the implementation of a firewall between the Omani intranet and the worldwide Internet, it is no longer possible to determine the number of hosts on the network that are located within Oman.

²²³Due to a change in the method used to connect the Saudi Arabian intranet to the worldwide Internet, Network Wizards was unable to determine the number of hosts connected in Saudi Arabia in January 1997.