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OpenNet Initiative



Country Study

Internet Filtering in Burma, 2005

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October 2005

Internet Filtering in Burma in 2005: A Country Study

OpenNet Initiative

http://www.opennetinitiative.net/burma

Internet Filtering in Burma in 2005

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1. EXECUTIVE SUMMARY

Burma, also known as Myanmar, implements one of the world's most restrictive regimes of Internet control. These on-line restrictions buttress off-line regulation of speech implemented by the State Peace and Development Council (SPDC), a group of military officials who maintain authoritarian rule over the state. Burma's system combines broad, vague laws of long standing with harsh penalties. Internet access is costly and the state uses software-based filtering techniques to limit significantly the materials Burma's citizens can access on-line. Most dial-up Internet accounts provide access only to the limited Myanmar Internet, not to the global network that most people around the world can access. The state maintains the capability to conduct surveillance of communication methods such as e-mail, and to block users from viewing Web sites of political opposition groups, organizations working for democratic change in Burma, and pornographic material. As compared to states elsewhere around the world, Burma's censorship regime is among the most extensive.

The OpenNet Initiative (ONI) tested its global list of Web sites and a high-impact list of sites with material known to be sensitive to the Burmese state. On the global list, we found nearly 11% of pages tested blocked, with a high level of filtering of e-mail service provider sites (85%) and pornographic sites (65%). The state also blocked significant numbers of gambling (24%), group Web sites (18%), and free Web space sites (18%). On our high impact list of sites with content known to be sensitive to the Burmese state, we found 80% of sites blocked, including nearly all political opposition and pro-democracy pages tested. These findings align with Burma's well-documented efforts to monitor e-mail communication by its citizens and to control political dissent and opposition movements.

Burma's commitment to regulating Internet content through technical methods is demonstrated by its purchase and ongoing implementation of filtering software from the U.S. company Fortinet. Our research suggests that Burma continues to seek to refine its censorship regime. Burma's system of Internet control shows no signs of lessening, and may worsen as it moves to a more sophisticated software product and as the state moves to tighten on-line restrictions.[1]

[1] *See Websites Barred in Burma*, Mizzima News, June 10, 2005, *available at* http://www.mizzima.com/mizzima/archives/news-in-2005/News-in-June/10-Jun-05-11.htm.

2. Political, Technical, and Legal Context In Burma

A. Sensitive/Controversial Topics for Media Coverage

The State Peace and Development Council (SPDC)'s censorship efforts are focused mostly on suppressing pro-democracy groups, especially the National League for Democracy (NLD) and its leader, Aung San Suu Kyi.[2] The state is very sensitive to international criticism regarding human rights violations, repeatedly accusing Amnesty International of acting as a dissident propaganda vehicle,[3] and the United Nations of using Burma as a politically expedient "soft target."[4] Pornographic materials are also forbidden, and the state blocks a significant number of pornographic Web sites, but SPDC's primary motivations for censorship appear to be political as opposed to moral or cultural. We found these sensitivities reflected in our testing of technological filtering of the Internet.

B. Internet Infrastructure and Access

There are two ISPs in Burma, the Ministry of Post and Telecommunications (MPT) and the semi-private Bagan Cybertech (BC). Each is estimated to have roughly 15,000 subscribers; observers believe that, on average, each subscription services from five to ten people, placing Burma's Internet penetration at 0.6% at most (a rate similar to its reported telephone density of 0.68%). Most of the subscriptions are via dial-up connections, and the quality of the phone lines is low, providing connection speeds of 24kbps at best. Furthermore, since computers are too expensive for most Burmese citizens, and dial-up accounts only provide access to the Myanmar Internet and state-run e-mail services, most Burmese Internet users access the Internet from cybercafés in Rangoon and Mandalay. Broadband connections are available, primarily to businesses, via ADSL (with about 1000 subscribers), wireless local loop (WLL—BreezeLan 2.4gHz point-to-multipoint access via at least four Points of Presence, three in Rangoon and one in Mandalay, with about 1800 subscribers), or small iPSTAR satellite terminals using bandwidth acquired from Shin Satellite, part of the corporate empire of Thai Prime Minister Thaksin Shinawatra.

Outside the country's two major cities (Rangoon and Mandalay), the roughly 1000 iPSTAR terminals are often the only way to obtain a telephone line, let alone Internet connectivity; approximately 70% of installations are used only for Internet telephony via Voice over Internet Protocol (VoIP). Broadband services range in speed from 64kbps to 512kbps. ADSL is the newest and cheapest broadband, costing under $700 US for installation (while WLL and iPSTAR solutions cost over $2000 US). MPT's broadband is available only to government institutions, while corporate and personal subscribers account for the majority of BC's users.

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[2] U.S. Department of State, *Country Reports on Human Rights: Burma (2004)*, *at* http://www.state.gov/g/drl/rls/hrrpt/2004/41637.htm.
[3] Myanmar Information Committee, *A Response on Recent Amnesty International's Report*, June 19, 1999, *at* http://www.myanmar.gov.mm/Infosheet/1999/990619.htm.
[4] Myanmar.com, *Human Rights in Myanmar, at* http://www.myanmar.com/Understanding%20Myanmar/hrm.html.

MPT is connected to the SEA-ME-WE-3 undersea cable and is estimated to have about 45mbps in bandwidth that it shares with BC. BC, in addition, has a 15mbps satellite connection. Both are believed to ground in Hong Kong. Observers estimate that the MPT uses at least half of the country's aggregate 60mbps in international IP connectivity for VoIP, leaving about 30mbps of Internet bandwidth.

Besides the two official ISPs, a select few organizations have reportedly established their own Internet access, including a number of foreign embassies (those of the US, the UK, France, Germany, Japan, and Thailand), international organizations (the UNDP and UNICEF/IOM/IOL), and powerful foreign energy-related commercial interests such as Total and Schlumberger. It is believed that these connections are not licensed by the MPT, but it appears that the MPT at least tolerates them.

At the time of ONI's testing in spring 2005, Bagan Cybertech employed the DansGuardian open source filtering software to block access to selected Internet sites.[5] However, Burma purchased the Fortinet firewall product in May 2004, apparently with the intention of using the software in e-government projects and for Web content filtering.[6] Fortinet's filtering solution incorporates a firewall server and a database that categorizes Web pages.[7] ONI's research and in-country contacts indicate that Burma is migrating from the DansGuardian platform to Fortinet to implement its technical filtering regime. In-country sources provided text of the "block page" displayed when a Bagan Cybertech user tries to access a prohibited site; this text has characteristics of the Fortiguard filtering product.

ONI contacted Fortinet directly, by telephone and by e-mail, to obtain the company's input on the use of its product in Burma. We asked the company to respond to the following four questions:

1. Has Burma implemented one of Fortinet's products? If so, where, what, and for how long?
2. Does Fortinet know of the product's use? What functions are being used? Are there functions that are being used exclusively in Burma?
3. Has Fortinet helped Burma configure the product(s)? If so, was the product configured to comply with the 2000 Web Regulations instituted by Burma?
4. What else would Fortinet like to add on this subject? What should people know about the company and its activities in order to understand the situation?

ONI received the following reply from Michelle Spolver, Fortinet's Director of Worldwide Public Relations:

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[5] *See DansGuardian*, *at* dansguardian.org.
[6] *Prime Minister Attends Ceremony to Introduce Fortinet Antivirus Firewall*, The New Light of Myanmar, May 16, 2004, *available at* http://www.myanmar.gov.mm/NLM-2004/May04/enlm/May16_h1.html.
[7] *See* Fortinet, *Fortiguard Web Filtering*, *at* http://www.fortinet.com/products/fortiguardwcf.html.

"Fortinet employs a two-tier sales model, in which we sell 100% of our products to resellers (who then resell to end-users). We do not directly sell, deploy or configure our products for end-users. Additionally, we have no record in our databases of Myanmar Millenium Group being a Fortinet reseller (although, it appears by the article you sent me[8] that perhaps initial discussions were had)."[9]

An article in the *New Light of Myanmar* newspaper covering the sale of the Fortinet product to Burma shows a picture of Benjamin Teh, Fortinet's sales director for South Asia, presenting a gift to Burma's Prime Minister at a ceremony commemorating the sale.[10] Given Mr. Teh's participation, it seems unlikely that Fortinet did not know of the sale of its software to Burma. ONI notes that Fortinet does not indicate it restricts re-sellers from conducting business with Burma, unlike companies such as Sun Microsystems.[11]

Information from Burmese sources indicates that the filtering situation for Bagan Cybertech users has grown more restrictive since the deployment of the Fortinet Fortiguard product. Whereas the open source DansGuardian filter requires more work on the part of local administrators, Fortinet's products – supported by substantial venture-capital investments and surrounded by a suite of security technologies – are more likely to be updated on a full-service basis by an outside third-party.

C. Legal Background

The Burmese legal system is controlled entirely by the SPDC, an authoritarian body of high-ranking military officers.[12] The Council rules by decree, appoints every member of the Supreme Court, and approves each lower court judicial appointment made by the Supreme Court.[13] A patchwork of laws promulgated by the SPDC and inherited from previous governments confers power upon the state to punish citizens harshly for a wide range of offenses related to the spread of information, both through traditional and electronic means.[14] These powers are redundant as a number of broad security measures give the state discretion to punish virtually any kind of activity. The Emergency Provisions Act of 1950 outlaws the spread of "false news," "creat[ing] panic," and "undermining the security of the Union [by] affecting the

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[8] ONI referenced the article *Prime Minister Attends Ceremony to Introduce Fortinet Antivirus Firewall*, in the publication The New Light of Myanmar, in our initial phone conversation with Fortinet.
[9] E-mail message from Michelle Spolver, Sept. 26, 2005.
[10] *Prime Minister Attends Ceremony to Introduce Fortinet Antivirus Firewall* (showing picture of Benjamin Teh); Benjamin Teh, *The Stealth-Based Threat to Computing*, Voice & Data, Feb. 2005, *available at* http://www.fortinet.com/news/media/AU_VoiceData_Feb05.pdf (describing Mr. Teh as "Fortinet Sales Director for South Asia" and containing a picture of Mr. Teh).
[11] Sun Microsystems, *General FAQs*, *at* http://www.sun.com/software/solaris/trustedsolaris/faqs.xml (stating that "it is Sun's policy to not ship products to Burma").
[12] U.S. Department of State, *Country Reports on Human Rights: Burma (2004)*.
[13] U.S. Department of State, *Country Reports on Human Rights: Burma (2004)*.
[14] *See generally The Law Amending the Myanmar Wireless Telegraphy Act*, 1993, translation *available at* http://www.blc-burma.org/html/Myanmar%20Law/lr_e_ml93_13.html; *The Television and Video Law,* 1996, translation *available at* http://www.blc-burma.org/html/Myanmar%20Law/lr_e_ml96_08.html; *The Computer Science Development Law,* 1996, translation *available at* http://www.blc-burma.org/html/Myanmar%20Law/lr_e_ml96_10.html.

morality… of the public."[15] The Unlawful Associations Act of 1908 (amended in 1957) prohibits any association "which has been declared to be unlawful by the President of the Union."[16] Finally, the State Protection Law of 1975, called "The Broadest Law in the World" by the Burmese Lawyers' Council,[17] allows the state to declare martial law at any time, "restrict[ing] any citizen's fundamental rights" without charge.[18] Each of these laws is still in use today.[19]

D. General Media Regulation

Burma's media controls are considered among the world's strictest.[20] After the military coup in 1962, authoritarian ruler Ne Win's[21] regime enacted the Printers and Publishers Registration Law, banning independent newspapers and requiring that all printed material be submitted to the Press Scrutiny Board (PSB) before distribution.[22] As amended in 1975, the law prohibits printing "anything detrimental to the ideology of the state," "any incorrect ideas and opinions which do not accord with the times," "any descriptions which, though factually correct, are unsuitable because of the time or circumstances of their writing," and "any criticism of a non-constructive type of the work of government departments."[23]

Today, Burma's press consists almost exclusively of state-run sources including three newspapers, three television stations, two radio stations, and one news agency.[24] The two English-language newspapers are never critical of government actions[25] and the more strictly controlled of the two, *The New Light of Myanmar*, is often overtly propagandistic.[26] *The*

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[15] *Emergency Provisions Act*, Mar. 9, 1950, unofficial translation *available at* http://www.blc-burma.org/html/Suppressive%20Law/s5epa_e.html.
[16] *The Unlawful Associations Act*, Dec. 11, 1908, *available at* http://www.blc-burma.org/html/Suppressive%20Law/ulaa_e.html.
[17] P.Gutter and B.K. Sen, *Burma's State Protection Law: An Analysis of the Broadest Law in the World*, Dec. 2001, *available at* http://www.blc-burma.org/pdf/op/bspl.pdf.
[18] *State Protection Law, Chapter 2, Article 3,* 1975, translation *available at* http://www.blc-burma.org/html/Suppressive%20Law/spl_e.html.
[19] *See* U.S. Department of State, *Country Reports on Human Rights: Burma (2004)* (noting abuse of the Emergency Provisions Act and the Unlawful Associations Act); Burma UN Service Office of the National Coalition Government of the Union of Burma, *Briefing Paper on the Human Rights Situation In Burma, Year 2003-2004*, *available at* http://www.apsahrs.org/BurmaBriefingPaper.pdf (documenting use of the State Protection Act to extend prison sentences beyond statutory limits).
[20] BBC News Online, *Country Profile: Burma,* Apr. 1, 2005, *at* http://news.bbc.co.uk/1/hi/world/asia-pacific/country_profiles/1300003.stm#media.
[21] *See generally* Robert Horn, *The Puppet Master of Burma*, Time, Dec. 9, 2002, *at* http://www.time.com/time/asia/covers/1101021216/newin.html.
[22] International Press Institute, *2003 World Press Freedom Review*, *at* http://www.freemedia.at/wpfr/Asia/myanmar.htm
[23] Venkat Iyer, *Acts of Oppression: Censorship and the law in Burma*, Mar. 1999, *available at* http://web.archive.org/web/20020617064004/http://www.article19.org/docimages/443.htm#leg.
[24] BBC News Online, *Country Profile: Burma*.
[25] BBC News Online, *Country Profile: Burma*.
[26] *See Rumours, the tool of terrorist destructionists*, The New Light of Myanmar, June 15, 2005, *at* http://www.myanmar.com/nlm/article/June15.htm (urging citizens to ignore all but state-issued news); *Only if objective conditions of Myanmar are viewed in right perspective,* The New Light of Myanmar, June 5, 2005, *at* http://www.myanmar.com/nlm/article/June05.htm (criticizing "pessimistic" Western outlook on "Myanmar's democracy transition").

Myanmar Times was launched in 2000 under then-prime minister Khin Nyunt, reportedly in an effort to improve the junta's international image with regard to press freedom,[27] and subsequently enjoyed almost-exclusive ability to publish politically sensitive stories.[28] In late 2004, Nyunt and roughly 300 other senior military intelligence officers were ousted, possibly for failing to share wealth obtained through state-run commercial enterprises.[29] The deputy chief executive officer of *The Times*' publisher was among those purged, and the paper is now under army control.[30] International press freedom advocacy groups predict that Nyunt's removal will lead to still stricter press controls in Burma.[31]

The few remaining independent publications must self-censor in order to avoid the harsh fines and prison sentences prescribed by the Printers and Publishers Registration Law.[32] Some publications, such as periodicals, must be submitted to the PSB after all copies have been printed; if the censors order a change, the entire run must be destroyed and reprinted at the publisher's cost, providing a further disincentive to print sensitive content.[33] The PSB also continues to force the closure of publications that include political content,[34] apparently regardless of compliance with PSB submission guidelines.[35] This mode of publication does not make things easy for an online publishing environment, whether as an extension of the mainstream press or through blogging, to thrive.

E. Internet Access Regulation

1. Legal Access Controls

Burmese law strictly regulates Internet access. The 1996 Computer Science Development Law requires that all network-ready computers, as well as fax machines, be registered with the Ministry of Communications, Posts and Telegraphs (MPT) prior to importation, possession, or use.[36] Such registration is accompanied by a license agreement and

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[27] Committee to Protect Journalists, *Special Report: Burma Under Pressure*, Feb. 2002, *at* http://www.cpj.org/Briefings/2002/Burma_feb02/Burma_feb02.html.
[28] Committee to Protect Journalists, *Special Report: Burma Under Pressure*.
[29] Bertil Lintner, *Myanmar payback time*, Jane's Defense Weekly, June 15, 2005, *available at* http://www.asiapacificms.com/articles/myanmar_payback/.
[30] Lintner, *Myanmar payback time*.
[31] Southeast Asian Press Alliance, *SEAPA warns of worsening press conditions following prime minister's dismissal*, Oct. 22, 2004, *at* http://www.seapabkk.org/alerts/2004/11/20041102.html.
[32] *See The Law Amending the 1962 Printers and Publishers Registration Law,* June 18, 1989, *available at* http://www.ibiblio.org/obl/docs3/16-89-P&PRegActamdmt.htm (increasing maximum prison sentence for violations to 7 years and maximum fine to US $5,100).
[33] Human Rights Watch, *Burma: Childrens Rights and the Rule of Law*, Jan. 1997, *available at* http://www.hrw.org/reports/1997/burma2/Burma-05.htm.
[34] *Magazine banned by military, editor circumvents censorship by publishing different magazine*, International Freedom of Expression eXchange, Apr. 9, 2004, *at* http://www.ifex.org/en/content/view/full/58225.
[35] *Press freedom organisations challenge military junta's denial over closure of Khit-Sann*, Reporters Without Borders, Sept. 22, 2004, *at* http://www.rsf.org/print.php3?id_article=11442.
[36] *Computer Science Development Law*, *§§ 27, 28,* Sept. 20, 1996, *at* http://www.myanmar.com/gov/laws/computerlaw.html.

associated fees that are determined by the MPT.[37] Failure to register a computer or a network carries a prison sentence of 7 to 15 years and a possible fine.[38]

In 2000, the MPT issued a list of regulations governing Internet access and usage. Most of the regulations relate to prohibited content and hacking, but one provision prohibits owners of registered Internet connections from allowing others to use their connections. One regulation reserves to MPT "the right to amend and change regulations on the use of the Internet without prior notice."[39] Violations of the 2000 regulations are punishable by revocation of access and "legal action,"[40] possibly under section 34 of the Computer Science Development Law, which prescribes up to 6 months imprisonment, a fine, or both for "fail[ure] to comply with a prohibitory order."[41]

2. Economic and Structural Access Controls

In addition to legal regulatory controls, economic factors play a large role in limiting Internet access. Merely establishing a broadband connection with Burma's main ISP, state-run Bagan Cybertech, costs $1,300 US,[42] a prohibitive sum in a state where the average annual income is $225 per capita.[43] Consequently, nearly all of Burma's home Internet subscribers (between 28,000[44] and 35,000[45]) use dial-up. Fifteen hours of dial-up access can be purchased for 8,000 ks (around $9),[46] as can one year of e-mail access.[47] However, individual subscribers may only access state-monitored e-mail and the country's Intranet, a small collection of mostly government and business Web sites hosted by Burmese companies.[48] Moreover, users outside the dialing codes of Burma's two largest cities, Rangoon and Mandalay, must pay long distance fees to connect to the service.[49]

Citizens who want to access the World Wide Web can only do so from Internet cafés in Rangoon and Mandalay.[50] While providing expanded access to those who can afford it, cafés

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[37] Computer Science Development Law, § 31.
[38] Computer Science Development Law, §§ 32, 33, 35.
[39] *The new Net regulations in Burma*, Digital Freedom Network, Jan. 31, 2000, archived copy *available at* http://web.archive.org/web/20010220220441/http://dfn.org/voices/burma/webregulations.htm.
[40] *The new Net regulations in Burma*, Digital Freedom Network.
[41] Computer Science Development Law, § 34.
[42] *Bagan Cybertech Announces Further Internet Restrictions,* The Irrawaddy, June 7, 2005, *at* http://www.irrawaddy.org/aviewer.asp?a=4695&z=153.
[43] U.S. Department of State, *Country Reports on Human Rights: Burma (2004)*.
[44] CIA, *The World Factbook – Burma (2003)*, updated June 14, 2005, *at* http://www.cia.gov/cia/publications/factbook/geos/bm.html.
[45] Shawn L. Nance, *How to fool the cyber spooks,* The Irrawaddy Online, Mar. 27, 2005, *at* http://www.irrawaddy.org/aviewer.asp?a=4504&z=104 (inset).
[46] Mail4u, *Access Kit FAQ, at* http://www.mail4u.com.mm/kit.asp?s=kit.
[47] Bagan Cybertech, *About mail4u*, *at* http://www.bagan.net.mm/products/services/aboutmail4u-e.asp.
[48] Reporters Without Borders, *Internet Under Surveillance – Burma (2004)*, http://www.rsf.org/article.php3?id_article=10748&Valider=OK.
[49] *IT in Burma,* Democratic Voice of Burma, Jan. 3, 2005, *at* http://english.dvb.no/news.php?id=1207.
[50] *IT in Burma,* Democratic Voice of Burma.

have rates (around $1.50 per hour in 2003[51]) that are still expensive for the average Burmese. Anonymous Internet use is impossible; cybercafé licenses require that patrons register their name, identification number, and address to gain access.[52] Opportunities for anonymous communications are further hampered by the state's ban on free e-mail sites such as Hotmail and Yahoo! Mail,[53] enforced through filtering software obtained from the open source DansGuardian project and purchased from U.S.-based vender Fortinet.[54]

In June 2005, Bagan simultaneously announced that its monthly broadband rates would double to $35, effective July 1, and suspended the creation of new accounts indefinitely (though it is unclear whether this applies only to broadband accounts or to dial-up as well).[55] This move is apparently a result of financial difficulties and may be tied to the October Military Intelligence purge, when the military arrested the deputy CEO of Bagan, Ye Naing Win (Khin Nyunt's son), and took control of the company.[56] Regardless, Bagan's troubles may seriously impede the spread of Internet access throughout Burma.

F. Internet Content Regulation

Internet content is most directly regulated by the 2000 Web Regulations, which state the following:

- Any writings detrimental to the interests of the Union of Myanmar [Burma] are not to be posted.
- Any writings directly or indirectly detrimental to the current policies and secret security affairs of the government of the Union of Myanmar are not to be posted.
- Writings related to politics are not to be posted.
- Internet users are to inform MPT of any threat on the Internet.
- Internet users are to obtain prior permission from the organization designated by the state to create Web pages.[57]

The final regulation provides that "Internet use will be terminated and legal action will be taken for violation of any of these regulations."[58] The Regulations do not define "legal action," but presumably violations will be prosecuted according to analogous provisions in one of the many other laws regulating speech.

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[51] *The great firewall of Burma*, The Guardian Online, July 22, 2003, *at* http://www.guardian.co.uk/online/news/0,12597,1003752,00.html.
[52] Privacy International, *Silenced – Burma*, Sept. 21, 2003, *at* http://www.privacyinternational.org/article.shtml?cmd%5B347%5D=x-347-103639.
[53] *The great firewall of Burma*, The Guardian Online.
[54] *Prime Minister Attends Ceremony to Introduce Fortinet Antivirus Firewall*, The New Light of Myanmar.
[55] *Bagan Cybertech Announces Further Internet Restrictions*, The Irrawaddy.
[56] Lintner, *Myanmar payback time*.
[57] *The new Net regulations in Burma*, Digital Freedom Network.
[58] *The new Net regulations in Burma*, Digital Freedom Network.

Nearly identical prohibitions of content "detrimental" to state interests can be found in the Printers and Publishers Law,[59] the Computer Science Development Law,[60] and the Electronic Transactions Law,[61] all punishable by fines and prison sentences, some up to fifteen years. These are indistinguishable from, though often accompanied by, similar prohibitions on the distribution of "state secrets."[62] The prototype for the state secret rules appears to be the Official Secrets Act of 1923, which is still in use and broadly prohibits trafficking in any "information which is calculated to be or might be or is intended to be, directly or indirectly, useful to an enemy."[63] In practice, the law has been used to silence dissident voices: "secrets" under the law have included a book by Aung San Suu Kyi[64] and leaflets critical of the state.[65]

Presumably, information distributed via the Internet is subject to all of these laws, though ONI was unable to find a record of any arrests for posting banned content. This may have more to do with the difficulty of gaining private access to the World Wide Web than with government leniency.

G. Cybercafé Regulation

Cybercafés operate under license[66] from the Myanmar Information Communications Technology Development Corporation (MICTDC), a "consortium of 50 local companies with the full support from the Government of the Union of Myanmar."[67] In addition to requiring that users register before accessing the Internet, cybercafé licenses require café owners to take screenshots of user activity every five minutes and deliver CDs containing these images to the MICTDC at regular intervals. Reportedly, the MICTDC requests the CDs only sporadically, if at all, but such surveillance techniques nevertheless cause users to self-censor.[68] Finally, the licenses ban the use of tunneling software and proxies; reportedly, however, neither the licenses nor the state's filtering software have been effective in this regard. [69]

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[59] Iyer, *Acts of Oppression: Censorship and the law in Burma*.
[60] Computer Science Development Law, Section 35.
[61] Electronic Transactions Law, Chapter V (33).
[62] Electronic Transactions Law, Chapter V (33) (compare items a and b).
[63] *Official Secrets Act*, *Section 3(c),* Apr. 2, 1923, *available at* http://www.blc-burma.org/html/Burma%20Code/lr_e_bc02_17.html.
[64] *Press Freedom In Burma: A Reporters Without Borders Perspective*, Reporters Without Borders, *available at* http://www.dvb.no/vincent.html.
[65] Bertil Lintner, *Access to Information: The Case of Burma*, *at* http://www.asiapacificms.com/papers/pdf/burma_access_to_information.pdf.
[66] MODiNS.net, *Internet and Communication, available at* http://www.modins.net/MyanmarInfo/telecomm/int_02.htm.
[67] Mict-park.com.mm, *Welcome to MICT Park*, *available at* http://www.mict-park.com.mm/.
[68] *Something is Better than Nothing*, The Irrawaddy Online, Apr. 2, 2004, *at* http://www.irrawaddy.org/art/2004/april01.html.
[69] Nance, *How to fool the cyber spooks*.

3. TESTING METHODOLOGY

A. Methods

ONI performs technical testing across multiple levels of access at multiple time intervals. The team analyzes results within the contextual framework of the target state's filtering technology and regulations. To obtain meaningful, accurate results we:

- generate lists of domain names and URLs that have been or are likely to be blocked;
- enumerate ISPs and national routing topography;
- determine the type, location, and behavior of the filtering technology;
- deploy network interrogation and enumeration software at multiple access points; and
- conduct a thorough statistical analysis of results.

Determining which URLs to test is a vital component of our research, as it reveals the filtering system's technical capacity and content areas subject to blocking. ONI employs two types of lists:

1. a list of "high impact" sites reported to be blocked or likely to be blocked in the state of concern due to their content (for example, political opposition); and
2. a "global list" containing a control list of manually categorized Web sites reflecting a range of Internet content (for example, news and hacking sites).

To explore Internet filtering, we deploy network interrogation devices and applications, which perform the censorship enumeration, at various Internet access levels. These tools download the ONI testing lists and check whether specific URLs and domains are accessible from that point on the network. Interrogation devices are designed to run inside a state (i.e., behind its firewall) to perform specific, sensitive functions with varying degrees of stealth. Similarly, ONI distributes interrogation applications to trusted volunteers who run the software inside the state. For testing, ONI obtains network access at multiple levels through:

- Proxy servers,
- Long distance dial-up,
- Distributed applications, and
- Dedicated servers.

During initial testing, we use remote computers located in countries that filter. These remote computers are located behind the state's firewalls yet allow access to clients connecting from the wider Internet. We attempt to access the URL and domain name lists through these computers to reveal what content is filtered, and how consistently it is blocked. ONI also tests these lists from control locations in non-filtered states. The testing system flags all URLs and

domains that are accessible from the control location, but inaccessible from ones inside the target state, as potentially blocked.

B. Results Analysis

We carefully analyze the data obtained from testing to document the nature of filtered content, to explore the technical capabilities of the target state, and to determine areas that require in-depth study during internal testing. In particular, ONI examines the response received over HTTP when attempting to access filtered content. As discussed, when content is filtered, users often receive a "block page" – a Web page with text indicating that the requested content cannot be accessed.[70] In other cases, filtering can be less obvious or transparent, appearing to be network errors, redirections, or lengthy timeouts rather than deliberate blocking. We analyze HTTP headers – text sent from the Web server to the browser – to derive information about both the server and the requested page. This information is generally hidden from the end user. However, these headers indicate whether content was successfully accessed or was inaccessible. If an error occurs, the HTTP protocol returns codes that indicate the type of error in the header. Thus, by analyzing the headers captured during testing, we can distinguish between errors caused by Internet filtering and more mundane, unintentional network connection errors.

We classify results in one of four categories:

- URL is accessible both through the local connection and the remote computer (not filtered);
- URL is accessible through the local connection but inaccessible through the remote computer, which returned a different HTTP response code (possibly filtered);
- URL is accessible through the local connection but inaccessible through the remote computer due to a network connection error (possibly filtered, but not definitive); or
- URL is accessible through the local connection but inaccessible through the remote computer; the remote computer returns a block page (filtered).

If a URL is inaccessible through both the local connection and the remote computer, we consider it "dead" and remove it from the results.

The ONI team analyzes blocked, unblocked, and uncertain URLs both at an aggregate level (to estimate the overall level of filtering) and at a category level (to indicate what types of content the state seeks to control). We publish country studies that provide background on a state's political and legal system, lists of tested sites, and analysis of results to reveal and analyze what information a state blocks and how it does so. We note, however, that our results and analysis capture a "snapshot" of a state's filtering system for a specific point or period of time;

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[70] *See* Internet Censorship Explorer, *Blockpage.com*, *at* http://www.blockpage.com/gallery/ (defining a block page and providing examples).

governments can and do alter the content they block dynamically. This is particularly true for Burma, where the implementation of the Fortinet filtering software has reportedly increased the level of blocking of Internet content beyond that which was carried out using the DansGuardian open source filtering system.

C. Methods Specific to Burma

To evaluate Burma's filtering, we tested two lists (the global list and a high-impact list designed for Burma) from an access point on the ISP Bagan Cybertech within the state. This involved direct in-state testing on a broadband connection by a trusted volunteer.[71] These tests used the software application developed by ONI to examine filtering.

D. Topics Tested

ONI tested topics to which the Burmese government has demonstrated sensitivity. These include dissident and political opposition sites, pages on Burma's human rights record, sites about the indigenous Karen people, commentary and news pages, sites on circumventing filtering, and non-governmental organizations.

4. Results and Analysis

A. Summary

Burma filters certain content categories heavily, including political opposition sites, human rights pages, e-mail service providers, and pornography. This blocking is also broad, filtering at least one site in more than half the categories ONI tests on its global list. The approach of broad-based, but relatively inconsistent, filtering tends to have a particularly chilling effect on expression, as citizens are kept wondering about whether they will be able to break through the filter and whether or not they are being watched. Thus, in addition to strong legal and economic controls over Internet access and content, Burma implements a filtering regime that imposes significant limits on the material the state's citizens can access.

ONI's research suggests that Burma has moved from the DansGuardian filtering software to Fortinet's Fortiguard product since the time of our testing. Reports from in-country sources indicate that Burma's blocking has become more restrictive since this change. Thus, our results here likely underestimate the level of filtering experienced by Burmese Internet users at present.

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[71] ONI extends its sincere appreciation and gratitude to this volunteer, who remains anonymous as a safety precaution.

B. Global List Results

ONI's testing of its global list in Burma found significant blocking in several categories of Web sites, and at least some filtering in many categories. Web-based e-mail service providers, which provide the most common means of on-line communication in states with low rates of Internet penetration, were almost entirely blocked, as 17 of 20 sites tested (85%) were filtered. Given Burma's commitment to monitoring e-mail communication by its citizens, this result is not surprising. Burma also blocks nearly two-thirds of pornographic sites checked (24 sites blocked of 37 tested, 65%).

ONI also found lesser filtering of gambling sites (6 blocked of 25 tested, 24%), group discussion pages (3 filtered of 17, 18%), news outlets (3 filtered of 37, 8%), and human rights sites (3 blocked of 27, 11%). The state blocked 4 entertainment sites of 26 tested (15%), though three of these were on the go.com domain, which appears to be filtered in its entirety. Similarly, Burma blocked 4 search engines of 25 checked (16%), though major engines such as Google, MSN, and Yahoo! were available. The state filtered 2 of 11 free Web hosting sites tested (18%), and 2 of 18 anonymizer services checked (11%). These topics appear to be sensitive to the Burmese state, but not sufficiently so for it to implement more restrictive blocking of such sites.

We also detected low levels of filtering in the categories of encryption (1 site blocked of 9 tested, 11%), alcohol (1 / 21, 5%), famous bloggers (1 / 21 sites, 5%), hate speech (1 / 24, 4%), drugs (1 / 26, 4%), religion (normal) (2 / 51, 4%), sex education (1 / 24, 4%), major events (1 / 29, 3%), and gay / lesbian / bisexual / transgender issues (1 / 38, 3%). There is no clear pattern to this low-level blocking, other than that the blocking crosses many types of content.

Burma's blocking is relatively wide, with at least one site blocked in 19 of the 31 categories ONI tests with the global list.

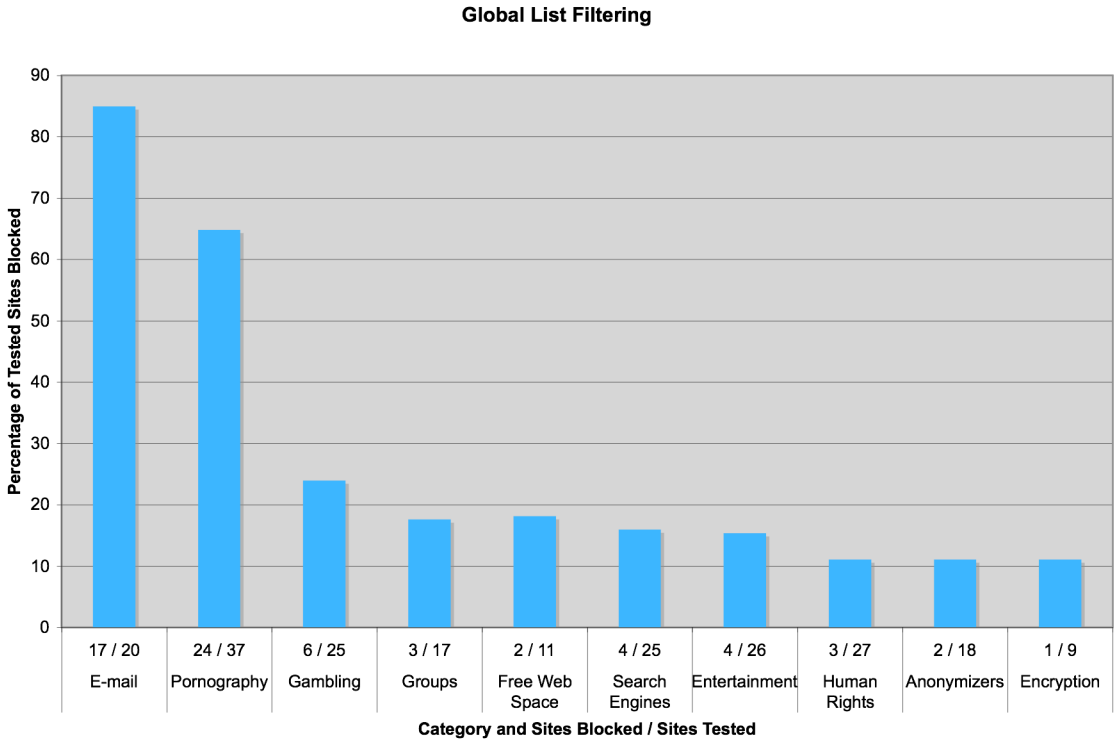


Figure 1 - Global List Filtering (Categories with >10% Filtering)

C. Burma High-Impact List Results

Of the twenty-five sites tested on ONI's high-impact list, twenty (80%) were blocked.[72] These included sites about political opposition groups, including pages focused on Nobel Peace Prize winner Aung San Suu Kyi; military opposition movements, such as the Karen National Liberation Army; non-governmental organizations, such as the Women's League of Burma; Google search pages for content on circumventing filtering and monitoring; and even organizations that seek national reconciliation and oppose sanctions, such as the Free Burma Coalition Mission. The five tested pages that were not blocked were the official Nobel Peace Prize page on Aung San Suu Kyi, a non-profit portal site about the Karen people, an archive of stories from the Bangkok Post on Myanmar, a site with the text of the DansGuardian block page, and the Free Burma Ranger site, which conducts relief missions in Burma and supports "the restoration of democracy, ethnic rights and the implementation of the International Declaration of Human Rights in Burma."[73] Overall, of the limited number of high-visibility sites tested, ONI found that Burma blocks the vast majority of sites related to sensitive topics such as political and military opposition groups, human rights, and pro-democracy organizations.

[72] For complete results from ONI's high-impact list testing, see Appendix 2.
[73] *See* The Free Burma Rangers, *About Us*, *at* http://www.freeburmarangers.org/About_Us/.

Burma's filtering of sites on the high-impact list included blocking sites that do not have obviously sensitive content. For example, the Online Burma Library compiles articles and scholarly materials on Burma; while half of its content derives from United Nations and Burma Peace Foundation materials, the site does not have a clear political or ideological agenda.[74] Similarly, the site of The Nation, a Bangkok-based newspaper, is filtered. While the site covers news from Burma, it also does not appear to take a normative position on the situation in the state. It is not clear whether these sites are deliberately targeted by the Burmese state or whether they are the result of inadvertent overblocking.

In sum, Burma effectively prevents access to the majority of sensitive political content that ONI tested.

5. CONCLUSION

Burma's authoritarian state imposes harsh restrictions on how its citizens may use the Internet by combining draconian, far-reaching, and hard-to-interpret laws, high prices for access, and extensive technical measures such as filtering Web content. The state's goal of eavesdropping on e-mail communication by Burmese citizens helps explain the high level of blocking of free Web-based e-mail sites in ONI's testing, and its repression of political dissent is demonstrated by the filtering of pages on opposition groups. Burma also seeks to block pornographic content, and prevented access to roughly two-thirds of such sites tested. Burma demonstrates lesser concern with topics such as gambling and other circumvention methods, such as anonymizers; these topics are either of less concern to the state or it has not yet been able to implement effectively a means of blocking them. The state's commitment to controlling access to on-line materials is demonstrated by its purchase and apparent implementation of Fortinet's Fortiguard Web filtering software; the level of blocking is reportedly even more restrictive now than when ONI performed its testing. As with other countries that ONI has reported on that employ commercial filtering products, Burma's use of Fortinet's Fortiguard highlights the spreading market for Internet filtering software products and services among states that filter. In sum, Burma's authoritarian laws and political system are replicated in its system of Internet control, making it one of the world's most repressive regimes in terms of controlling and monitoring activity on the Internet.

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[74] *See* David Arnott, *Introduction to the Online Burma/Myanmar Library*, May 2003, *at* http://www.burmalibrary.org/introduction.html.

APPENDIX 1

Global List Testing Results

Category	Number of Sites Tested	Number of Sites Blocked in In-Country Testing
Alcohol	21	1 (5%) – www.beer.com
Anonymizers	18	2 (11%) - www.guardster.com, www.primedius.com
Blogging Domains	18	0
Drugs	26	1 (4%) - cocaine.org
E-mail	20	17 (85%)
Encryption	9	1 (11%) - www.keptprivate.com
Entertainment	26	4 (15%) - movies.go.com, disney.go.com, abc.go.com, people.aol.com/people/
Famous Bloggers	21	1 (5%) - imao.us
Filtering Sites	8	0
Free Web Space	11	2 (18%) - www.freeservers.com, www.fortunecity.com
Gambling	25	6 (24%) - www.poker.com, www.onlinecasino.com, www.simslots.com, www.blackjack-gambler.com, www.onlinegamblingtips.com, www.blackjackplaza.com
Gay / Lesbian / Bisexual / Transgender / Queer Issues	38	1 (3%) - www.pflag.org
Government	53	0
Groups (including Usenet)	17	3 (18%) - groups.yahoo.com, www.supernews.com, www.xasa.com/grupos/
Hacking	22	0
Hate Speech	24	1 (4%) - www.ibiblio.org/nge/
Human Rights	27	3 (11%) - www.amnesty.org, www.rsf.org, www.ahrchk.net
Humor	18	0
Major Events	29	1 (3%) - www.falundafa.org
Miscellaneous	10	0
News Outlets	37	3 (8%) - abcnews.go.com, www.voanews.com, www.repubblica.it
Porn	37	24 (65%)
Provocative Attire	16	0
Religion (fanatical)	8	0
Religion (normal)	51	2 (4%) – ourworld.compuserve.com/homepages/AQanai_Ktav/kjahomep.htm,

		www.catholic.org
Search Engines	25	4 (16%) - www.metacrawler.com, www.excite.com, www.rambler.ru, www.anazi.co.za
Sex Education	24	1 (4%) - www.sexhealth.org
Translation Sites	12	0
Universities	32	0
Weapons / Violence	28	0
Women's Rights	29	0
Total	**740**	**78 (10.5%)**

APPENDIX 2

High Impact List Testing Results

Site	Blocked?	Content
http://www.freeburmacoalition.org/	Yes	Human rights / political campaign that questions sanctions and seeks national reconciliation
http://www.ibiblio.org/freeburma/	Yes	Volunteers seeking replacement of current government
http://www.freeburma.org/	Yes	Links to pro-democracy sites for Burma
http://www.burmacampaign.org.uk/	Yes	Campaign for Human Rights and Democracy in Burma
http://www.burmalibrary.org/	Yes	On-line repository for documents on Burma
http://www.burmafund.org/	Yes	"promotes dialogue and debates that inform the democratization process in Burma"
http://www.burmaproject.org/	Yes	"dedicated to increasing international awareness of conditions in Burma and to helping the country make the transition from a closed to an open society" – established by Open Society Initiative
http://www.dassk.com/	Yes	Site about Aung San Suu Kyi
http://www.irrawaddy.org/	Yes	Newspaper established by exiles that tends to be critical of the Burmese government
http://www.karen.org/	Yes	Site about the Karen people, who are indigenous to Burma / Thailand
http://www.burmadaily.com/	Yes	News site
http://www.myanmarnews.net/	Yes	Portal with Burma news / links
http://www.burmapeacecampaign.org/	Yes	Official Web site of Nobel Peace Laureate Campaign for Aung San Suu Kyi
http://www.asiantribune.com/	Yes	News / information site on Asia seeking Asian solidarity
http://knla.meabs.com/	Yes	Karen National Liberation Army – seeks independence for Karen state in eastern Myanmar
http://www.womenofburma.org/	Yes	Women's League of Burma – seeks to empower women in Burma
http://www.dvb.no/	Yes	Democratic Voice of Burma – non-profit Burmese news organization seeking to "impart

		the ideals of democracy and human rights"
http://www.birmanie.ch/	Yes	Association Suisse Birmanie – seeks to support oppressed Burmese and to provide them a voice
http://www.google.com/search?sourceid=navclient&ie=UTF-8&rls=GGLD,GGLD:2003-45,GGLD:en&q=POP3+SMTP+tunnel	Yes	Google search for POP3 + SMTP + tunnel
http://www.nationmultimedia.com	Yes	News site based in Thailand
http://zenodie.xaper.com/ucpage.htm	No	Text of Dans Guardian – Access Denied page
http://archives.mybangkokpost.com/bkkarchives/frontstore/search_result.html?type=a&key=myanmar	No	Bangkok Post stories on Myanmar
http://www.freeburmarangers.org/	No	"organization dedicated to freedom for the people of Burma"
http://www.karenpeople.org/	No	Non-profit portal about the Karen people
http://nobelprize.org/peace/laureates/1991/	No	Nobel Peace Prize page on Aung San Suu Kyi
Total		**20 sites blocked / 25 sites tested (80%)**

APPENDIX 3

Burma Background

A. Demographics

Burma is a country in Southeast Asia bordered by Bangladesh, China, India, Laos, Thailand, the Bay of Bengal and the Andaman Sea.[75] While reliable census figures are unavailable, most sources estimate Burma's population at 40 to 50 million people.[76] Ethnic Burmans (68%) constitute the largest ethnic group, but a variety of minority groups exist, including the Shan (9%), Karen (7%), Rakhine (4%), Chinese (3%), Indian (2%), and Mon (2%).[77]

B. Economy

Burma's economy is predominantly agricultural, and unstable economic conditions and international isolation have substantially limited economic growth.[78] The country's economy includes a substantial "black market" sector; Burma is the world's largest opium exporter.[79] Burma has shifted between socialist and capitalist market systems, with negative results under both approaches. Under a centralized socialist program in the 1960s (the "Burmese Way to Socialism"), economic growth stagnated and food shortages ensued.[80] In 1989, the state launched the "Burmese Way to Capitalism", which unfortunately resulted in significant entrenchment of wealth and corruption.[81] Moreover, in 2003 a banking crisis crippled the private economy, leaving little domestic capital available at a time when the country already suffered international sanctions that blocked foreign direct investment.[82] This economic crisis continues today.[83]

C. Politics

After 62 years of occupation by Great Britain, Burma gained sovereignty in 1948 as a parliamentary democracy. Despite ongoing ethnic conflict, the state remained democratic until

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[75] Askasia.org, *Burma Political Map (1999)*, *at* http://www.askasia.org/image/maps/myanmr1.htm.
[76] CIA, *The World Factbook – Burma*; Myanmar Ministry of Foreign Affairs, *About Myanmar : Population*, *at* http://www.mofa.gov.mm/aboutmyanmar/population.html.
[77] CIA, *The World Factbook – Burma*.
[78] CIA, *The World Factbook – Burma*; TravelBlog, *Burma's Economy*, *at* http://www.travelblog.org/World/bm-econ.html.
[79] CIA, *The World Factbook – Burma*.
[80] Thomas R. Lansner, *Brief History of Burma*, *at* http://journalism.berkeley.edu/projects/burma/history.html.
[81] Free Burma Coalition, *Trials of Total, and pro-Boycott Burma Activism*, Feb. 26, 2005, *at* http://freeburmacoalition.blogspot.com/2005/02/trials-of-total-and-pro-boycott-burma.html; AsiaWeek, *The Burmese Way to Capitalism,* Feb. 17, 1989, *available at* http://www.burmalibrary.org/reg.burma/archives/199701/msg00056.html, Amy Chua , *World on Fire: How Exporting Free Market Democracy Breeds Ethnic Hatred and Global Instability*, *available at* http://www.wnyc.org/books/11161.
[82] CIA, *The World Factbook – Burma*.
[83] *Burmese Economy Worsens*, Washington Times, Apr. 16, 2005, *at* http://www.washingtontimes.com/world/20050415-094806-3164r.htm.

1962, when a military coup took power.[84] The military nationalized the economy, outlawed the independent press, and established the Burma Socialist Program Party (BSPP)[85] as the only legal political party. In 1975, the National Democratic Front launched a guerilla insurgency against the BSPP.[86] In August 1988, soldiers opened fire on demonstrators calling for democratic elections.[87] To suppress unrest, Burma formed the State Law and Order Restoration Council (SLORC); SLORC declared martial law, and arrested or killed thousands of demonstrators through 1989. As many as 5000 people were killed, with a significant but unknown number imprisoned.[88] SLORC placed Aung San Suu Kyi, leader of the most popular opposition party (the National League for Democracy) and a future Nobel Peace Prize Winner, under house arrest in July 1989; she has been detained for most of the period since then.[89] Popular elections in 1990 gave the NLD a landslide victory.[90] The ruling military junta, though, declared the election irrelevant and intensified its repression of the NLD. SLORC has since been renamed the State Peace and Development Council (SPDC).[91]

Burma's ruling military state has been accused repeatedly of human rights violations by the United States, United Nations, Human Rights Watch, and Amnesty International, among others.[92] (For example, in May 2003, pro-government forces attacked Aung San Suu Kyi and a convoy of NLD officials.[93]) Accordingly, since 1997 the United States has prohibited new investment in Burma.[94]

The government has reason to be wary of the Internet; activists abroad began to organize on-line as early as 1996.[95] Although there is no dissent on Burma's Intranet, expatriates used The Free Burma Coalition and BurmaNet to spread information about political conditions in

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[84] *Timeline: Burma*, BBC News Online, July 26, 2005, *at* http://news.bbc.co.uk/2/hi/asia-pacific/1300082.stm.
[85] *The Constitution of the Burma Socialist Programme Party*, July 4, 1962, *available at* http://www.ibiblio.org/obl/docs/BSPP_CONSTITUTION.htm; Lansner, *Brief History of Burma*.
[86] *National Democratic Front (Burma)*, *at* http://www.ndf-burma.org/wno/.
[87] *Rangoon General Hospital dead and wounded list (7th Aug-17th Aug. 1988)*, Jan. 2003, *at* http://www.irrawaddy.org/res/88final1.html; Khin Saw Win, *The Memory of 8-8-88 Will Live On*, Burma Watch International, Nov. 10, 2004, *at* http://www.burmawatch.org/com-khin-mem-8-8-88.html.
[88] Brief History, *The Burma Campaign UK*, Feb. 8, 2004, *at* http://www.burmacampaign.org.uk/aboutburma/briefhistory.html; *Democracy Movement*, Union Aid Abroad – APHEDA, Feb. 11, 2004, *at* http://www.apheda.org.au/campaigns/burma_schools_kit/resources/1074470129_14920.html.
[89] *Daw Aung San Suu Kyi's pages*, *at* http://www.dassk.org/index.php.
[90] *The 1990 elections, the elected representatives, and their parties*, Online Burma/Myanmar Library, *at* http://www.burmalibrary.org/show.php?cat=1353&lo=d&sl=1.
[91] *Country Profile: Burma – Leaders*, BBC News Online, June 29, 2005, *at* http://news.bbc.co.uk/2/hi/asia-pacific/country_profiles/1300003.stm#leaders; *State Peace and Development Council*, Burma Fund, *at* http://www.burmafund.org/Pathfinders/Research_Library/Military/spdc.htm.
[92] Amnesty International, *Myanmar*, *at* http://web.amnesty.org/report2004/mmr-summary-eng; Human Rights Watch, *Burma*, *at* http://hrw.org/english/docs/2005/01/13/burma9826.htm; Paulo Sérgio Pinheiro, *Situation of Human Rights in Myanmar*, United Nations Economic and Social Council Commission on Human Rights, Jan. 5, 2004, *available at* http://www.unhchr.ch/Huridocda/Huridoca.nsf/0/a1cbfc0409c5de82c1256e460055e32c/$FILE/G0410036.doc; U.S. Department of State, *Country Reports on Human Rights: Burma (2004)*.
[93] Amnesty International, *Myanmar*.
[94] *See* U.S. Department of State, *Report on U.S. Trade Sanctions Against Burma*, Apr. 28, 2004, *at* http://www.state.gov/p/eap/rls/rpt/32106.htm; *see also* http://www.abc.net.au/news/newsitems/200505/s1371331.htm.
[95] Viola Krebs, *The Impact of the Internet on Myanmar*, First Monday, May 7, 2001, *at* http://www.firstmonday.dk/issues/issue6_5/krebs/.

Burma.[96] Dissidents successfully brought international pressure to bear upon the state, first through shareholder pressure and boycotts against corporations doing business in Burma, and then through U.S.-led economic sanctions.[97]

[96] *See, e.g., Free Burma Coalition Mission*, *at* http://www.freeburmacoalition.org/; *FreeBurma.org*, *at* http://www.freeburma.org/, *BurmaNet News*, *at* http://www.burmanet.org/.
[97] The BurmaNet News, Aug. 14, 1996, *at* http://www.burmanet.org/bnn_archives/1996/bnn0896n489.txt.