VoIP Resources:
Books and White Papers

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In my last column, I introduced a major document reviewing voice over IP (VoIP) security published by the National Institute of Standards and Technology (NIST), Special Publication 800-58 <http://tinyurl.com/6fse6>. In this column, I am presenting additional resources for those of you interested in deepening your knowledge of VoIP or in finding resources for teaching others about VoIP security.

TEXTBOOKS

- Davidson & Peters (2000) provided an overview of VoIP in a single short text dating back a few years. A similar overview is by Keagy (2000) and another one is from Miller (2002).

- Camarillo (2002) is a short text about Session Initiation Protocol (SIP), one of the major techniques used in VoIP. Chapters 4 (fundamentals of the protocol), 5 (examples of how SIP works), and 6 (security) are the core of the book.

WHITE PAPERS

- Ackerman et al. (2001) discussed “the theoretical background of certain vulnerabilities, testing and attacking tools” and found significant vulnerabilities in many VoIP solutions.
- A white paper by Halpern (2002) of Cisco Systems discusses security of VoIP in the context of the SAFE framework. The author begins, “This paper provides best-practice information to interested parties for designing and implementing secure IP telephony networks utilizing elements of the SAFE blueprints. All SAFE white papers are available at the SAFE Web site: <http://www.cisco.com/go/safe>. These documents were written to provide best-practice information on network security and virtual-private-network (VPN) designs.”
- Another white paper, Cisco (2003), extends this framework to what the company calls “Integrated Network Security for Cisco IP Communications” and which “will provide comprehensive security with system-level protection, integrity, and privacy through tighter integration with the security capabilities of the data network.”
- A 10-page white paper from Vitel (2003) and hardware offers some practical advice on protocols, hardware, and monitoring as useful tools in securing VoIP.
- Long (2002) and Boyter (2003) wrote very nice descriptions of sniffing attacks on VoIP and several countermeasures as part of their work for the GIAC Security Essentials Certification (GSEC) and GIAC Certified Incident Handler (GCIH) certification, respectively.
- Collier (2004) has excellent recommendations for securing VoIP which are worth quoting directly here:
  - Use some form of host-based intrusion detection to detect attacks.
o Deploy a voice-optimized firewall to protect the IP PBX from attackers on the LAN and Internet.
o Build a switched network. This not only improves performance, but also makes it more difficult for an attacker to access end points.
o Make use of VLANs to help segregate traffic.
o Secure all networking components, including switches, routers, etc.
o For campus VoIP, configure Internet firewalls and other security systems to prevent VoIP from entering or leaving the internal network.
o Limit the number of calls traveling over the WAN to the media gateway or any shared resource that could be overloaded by a DoS attack.
o Consider additional firewalls and security products to control or monitor traffic on the network.

- Molitor (date unknown) of Aravox Technologies wrote a couple of short white papers with helpful information about firewalls for VoIP systems.

In my next column, I will examine in more detail an excellent exposition of threats to VoIP from an Austrian student’s master’s thesis. See Thalhammer (2002) if you want a sneak peek.

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Works Referenced

<http://tinyurl.com/8pxya>

<http://tinyurl.com/bm9bn>


<http://tinyurl.com/cwgqm>

<http://tinyurl.com/dbmak>


<http://tinyurl.com/dxo7w>
A Master’s degree in the management of information assurance in 18 months of online study from Norwich University – see <http://www.msia.norwich.edu/> for details.

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