

## Eric D. Williams

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## Professional Experience

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- Currently: Expert Security Consultant on Internet and Computer Security for National Oceanic and Atmospheric Administration
- Expert Security Consultant: Design, Policy Development, Testing and Implementation of internetwork security for: Bureau of the Census, NOAA, Department of Commerce
- System Administration and Security Consultant for several area ISPs
- Numerous Security Consultation efforts under non-disclosure for "major media" outlets.
- Numerous Security Consultation efforts for Government Agencies.
- Over 12 years professional experience in Computer and Computer Communications Technology
- Recognized industry expert in implementation of OSI and Internet Protocol Suite technology.
- Experienced in advanced technical writing, presentation, and marketing.
- Senior Systems and Internetwork Engineer with experience in DoD and Private Industry
- Past Chairman - Convergence Working Group of the Open Systems Environment Implementors Workshop (OIW) OSETC (defunct), sponsored by the IEEE, Active Member of the Internet Society (ISOC) DC Chapter
- Participant in the Internet Engineering Task Force working groups on IP next generation (IPng), Internet Mail Extensions (mail-ext), Electronic Data Interchange integration (EDI-INT), Intrusion Detection (idwg), Public Key Infrastructure (pkix), Responsible Uses of the Internet (RUN) and others
- Contributor to numerous Internet security forums and discussion lists (eric@infobro.com)
- University of Maryland Baltimore County: 1983-1987, Biology / Music (NDC) - "my first love was always computers..."
- Certificate of Completion National Security Agency - INFOSEC Assessment Methodology Course (July 2000)

## President / Principal Consultant; Information Brokers, Inc.

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Mr. Williams is responsible for all management and program operations of this information and computer communications organization. Mr. Williams is a recognized leader in implementing open system solutions and Internet security. Mr. Williams consults leading industry market research firms to determine industry trends and **Black Enterprise Top 100** companies, **Fortune 500** companies and the **Federal Government**; for Internetwork design, and particularly expertise in the field of Internet Security, protocol design and implementation.

Mr. Williams develops policies and guidelines for the operation of 'secure' internetworks and has spoken at **National Oceanic and Atmospheric Administration (NOAA)** and **Department of Commerce** computer security working groups, forums and lectures; including workshops specifically designed to address NOAA internetwork security. Other recent speaking engagements include the **National Technical Association (DC Chapter)**, **International Black Buyer's and Manufacturers Expo and Conference (Fall '99)**. Mr. Williams is the **recipient** of the first **IBBMEC 2000 Technology Award**. **Digitize or Die (Fall '99)** and the **3<sup>rd</sup> Annual Rainbow/PUSH Coalition Wall Street Project Conference (January 2000)**, **Black Human Resources Network - Management Conference (Fall 2000)**. Mr. Williams has **participated in briefings with The White House** principal Executive Policy Advisors and with other African-American Internet companies to discuss minority participation in Internet business, research and development. Mr. Williams has acted as a primary educator and curriculum and documentation author for **the United States Agency for International Development's - Leland Initiative** establishing Internet connectivity on the African continent. Mr. Williams instructed **Leland coordinators and over 30 African country ambassadors and their staff** concerning

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internetworking fundamentals and the establishment, operations and regulation of Internet Service Providers (ISP's) within those countries. In August of 2000, Mr. Williams conducted a five-day workshop on **Internetwork Management and Enterprise Architecture Development** at Makerere University in Kampala, Uganda (with Computer Frontiers, Inc., Germantown, MD). The series focused on core technical and management areas of internetwork infrastructure deployment and enterprise management.

With in his work at NOAA, Mr. Williams was tasked initially to follow up work performed by **Lawrence Livermore National Laboratory** and collaborated with the **NASA Systems Incident Response Capability** (NASIRC), in developing security guidelines and policies that established the **NOAA Computer Incident Response Team (N-CIRT)**. Mr. Williams also responds to computer security incidents involving NOAA infrastructure and is currently aiding in **the development of N-CIRT policies and procedures**. Mr. Williams is the principle **author of the draft NOAA Public Key Infrastructure (PKI) Certificate Policy** and also **authored the draft National Weather Service Network Security Architecture** for the NWS Strategic Network Plan (for Reston Consulting Group, an 8(a) firm in Reston, VA). Mr. Williams is involved in numerous efforts to apply forensics to malicious programs, discover methods of introduction and assist in the development of detection tools that identify these types of exploits and combat **Cyberterrorism**.

## ***Making Data Safer – Securing Internetworks***

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Mr. Williams' experience with numerous operating systems, open systems protocols and programming languages (see below), make him a highly sought professional when it comes to implementing security from the home computer to major internetworked systems. Mr. Williams has been called to speak by the National Technical Association (NTA) on **Y2K and Internetwork Commerce and Banking** and has written papers concerning **Fast Track Public Key Infrastructure Implementation**. Mr. Williams recently completed successfully the **National Security Agency** sanctioned **INFOSEC Security Assessment Methodology** for determining in an government and industry standard fashion, the security posture of information systems and internetworks.

Mr. Williams is recognized as a senior expert in the security field in his role defining security policies and strategies for the **National Oceanic and Atmospheric Administration** (NOAA). The NOAA networks include the **National Weather Service, National Ocean Service, National Marine Fisheries Service** and other networks that make up systems used to track important environmental and weather predication data. Mr. Williams recently completed a comprehensive security risk assessment of the NOAA **National Virtual Data System**, a system used to provide all NOAA data center information in the public domain. The analysis was the pre-cursor and a primary element in facilitating security "tightening" for this popular and crucial NOAA information dissemination resource. Mr. Williams is instrumental in the NOAA PKI Working group. Mr. Williams is currently working on the **NOAA Firewall Implementation Policy**

Mr. Williams was instrumental in the implementation of initial security counter measures and security policy development at the **Bureau of Census**, when tasked to develop testing and implementation guidelines for the prototype CENNET internet firewall implementation. Mr Williams' testing guidelines identified weaknesses in the proposed firewall implementation when used in conjunction with layer-2 switching equipment.

## ***Experience Counts – Internet Engineering Task Force / Internet Society Participation***

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Mr. Williams has over 12 years of experience concerning the security frameworks and dynamics for implementation of the Internet Protocol Suite (IPS). Some of these efforts are known today as: World-Wide-Web (HTTP), File Transfer Protocol (FTP), Simple Mail Transfer Protocol (SMTP), Post Office Protocol (POP), Interactive Mail Access Protocol (IMAP), Lightweight Directory Access Protocol (LDAP),

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Intrusion Detection Exchange Format Data Model (IDEFDM) and Secure Sockets Layer (SSL), to name a few. Mr. Williams' experience includes Open System Interconnection (OSI) protocols, and open systems implementation profiles developed and managed by the Open System Implementor's Workshop (OIW) an entity that is now defunct which was sponsored by the Institute of Electrical and Electronics Engineers (IEEE).

## ***Making It Work Together – Open System Implementor's Workshop***

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Within the OIW, Mr. Williams was intimately involved with the development of profiles and protocol implementation conformance statements (used internationally for procurement and standardization) specifically concerning the convergence of IPS and OSI technologies. Mr. Williams has exhaustive knowledge concerning the implementation and integration of Open Systems Interconnection (OSI) technology. Mr. Williams is uniquely qualified to plan and implement security solutions, risk assessment, disaster contingencies and recovery, and security policies. In his work within standards bodies and communities Mr. Williams has developed expertise in the design and implementation of 'next generation' technologies such as Public Key Infrastructure (PKI) and has aided in the development of industry standards for the implementation of a vendor independent PKI.

## ***Technical Projects, Programming and Operating System Experience – Knowledge: In Depth***

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### **CURRENT PROJECTS**

#### **National Oceanic and Atmospheric Administration (NOAA) - Reston Consulting Group**

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Mr. Williams has contracted with Reston Consulting Group to develop policies, guidelines and implementation parameters for the NOAA Telecommunications and ADP Security Branch (TASB). The current tasking includes the following areas:

- Secure Infrastructure Implementation and Policy
- Public Key Infrastructure (authoring the Draft NOAA Certificate Policy)
- Computer System Security (Implementation and Policy)
- Information Security Policy
- Security Awareness Training
- Computer Security Incident Response (Active Response as well as Policy Development)
- Security Architecture development (for the National Weather Service internetwork)

### **PAST PROJECTS**

#### **Firewall Test and Implementation Plan - US Dept of Commerce, Bureau of the Census - American Technical Resources (ATR) / Reston Consulting Group (RCG)**

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Mr. Williams completed planning and implementation of the Bureau of Census internetwork firewall system. The system consisted of a ANS Interlock Application Gateway Firewall and router filter security. Mr. Williams presented lectures concerning policy and implementation considerations, designed and developed a test plan testing the integrity of the vendor implementation and conformance with requirements.

Mr. Williams also designed tests which confirmed IP router and ethernet switch vulnerability to IP spoofing and MAC spoofing. The MAC spoofing test results were crucial in the design and implementation of the secure system, and represent the only known published ethernet switch MAC spoofing test suite. The results were published in confidential Department of Commerce lectures to ensure security integrity. Mr. Williams also developed personnel role definitions for the enforcement of next generation ADP security, where Internet is readily accessible, and lectured extensively on considerations for the establishment of ADP and Telecommunications policies concerning Internet access, network load balancing, management, and physical security.

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## **Services Design, System Administration and Implementation - MettersMEDIA Network Inc. - InfoBro**

Mr. Williams' company provides system administration and technical support for the MettersMEDIA Network, Inc. a national Internet Services Provider. Mr. Williams is tasked to design and implement business, organizational and user account services; including web page design, system administration, Internet site security, system security and technical support. Support is provided though systems running Windows 3.1 Windows/NT, Silicon Graphics *Indy*, and Sun Sparc workstations and Apple Macintosh PowerPC. The MettersMEDIA Network Inc. is a child company of Metters Industries, Inc.

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## **Distance Learning Initiative Planning - Foundation for Educational Innovation, Inc. - InfoBro**

Mr. Williams aided in the planning of the Foundation for Educational Innovation distance Learning initiative at several Washington DC area public primary schools. The design work included planning for network utilization in a multimedia environment. The underlying network included video and audio systems utilizing narrow-band ISDN and T-1 services. Mr. Williams was consulted concerning implementation considerations, designed and developed a test plan testing the integrity of the vendor implementation and conformance with requirements.

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## **GOSIP and POSIX Transition - Integrated Systems and Communications (ISC)**

Mr. Williams completed recommendations for GOSIP and POSIX migration for the National Defense University. This migration plan developed recommendations on implementing GOSIP, follow-on OSI standards, POSIX/FIPS-151, and future POSIX standards. Migration steps were detailed for migrations using RFC 1006 "ISO Transport on Top of TCP", POSIX Simple Network Services API, POSIX Network Services API, X/Window technology, and POSIX Windowing API.

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## **Mail Gateway Implementation - ISC**

At the National Defense University (NDU), Mr. Williams implemented gateway systems for LAN E-Mail to X.400 message transfer. Mr. Williams was the first to integrate interoperability between the NDU native Xerox Network with the Prototype Novell LAN for messaging. The implementation provided the only method of electronic communication between the Xerox network users and the Novell network users. This implementation eventually provided messaging relay and transfer services to the Novell users. This work was performed under a subcontract to Wang Corporation.

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## **National Defense University (NDU) Prototype Plan - ISC**

Mr. Williams was chosen to develop the implementation strategy for interoperation between the NDU Information Resources Management College (IRMC) prototype network and the NDU Xerox network. Mr. Williams structured the prototype network implementation so that normal operations were not disrupted. The project also required testing of interoperability between Apple Macintosh user end systems and PC-compatible end systems. The following was delivered:

- Procedures and standards for interoperability between Mac and PC users for WordPerfect documents
- Shared file volumes accessible by Mac and PC users
- Messaging between the Mac and PC users
- Projected requirements and interoperability plan for Messaging between the Xerox network and the NDU:IRMC prototype Novell LAN

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## **WordPerfect Office Gateway Analysis, Design, and Prototype - ISC**

Mr. Williams completed an analysis and design of a distributed messaging environment with a gateway to the MILNET/Defense Data Network. The analysis provided application scenarios and implementation guidelines for remote (asynchronous) WordPerfect Office (WPO) E-Mail transmission to activities supported by National Defense University. This analysis also addressed integration of NDU into the MILNET/Defense Data Network. Mr. Williams coordinated obtaining evaluation systems directly from vendors and resellers. These systems were implemented in a test bed environment. Mr. Williams assessed the viability of low cost asynchronous communications technology for the support of mobile NDU users and remote sites. Mr. Williams implemented

gateway technology that allowed message transfer to and from remote *laptop* users, as well as remote WordPerfect Office asynchronous gateway sites.

## **Router Interoperability Recommendations - Open Systems Technology (OST)**

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Mr. Williams assessed interoperability issues connected with CISCO and Timeplex routers and delivered an interoperability test outline. Considerations included support for Point-to-Point protocol, Open Shortest Path First, Intermediate System-Intermediate System and static CLNP routing. This project was completed under an OST subcontract to American Systems Corporation.

## **GOSIP/OSI LAN Implementation - OST**

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For the Defense Information Systems Agency (DISA), Mr. Williams developed several alternatives and a recommended approach for implementing eight GOSIP/OSI LANs. Since these LANs would be interconnected by the current IPS - based MILNET, Mr. Williams had to develop a strategy using IPS to GOSIP/OSI application gateways. The project was completed under a subcontract to DIGICON Corporation. In the final report, Mr. Williams detailed both target and interim implementations. Different configurations were developed for LAN segments with and LAN segments without GOSIP/OSI routing capabilities.

## **(IC)<sup>2</sup> Protocol Transition Plan - OST**

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For the Navy Integrated Interior Communications and Control (IC)<sup>2</sup> Program, Mr. Williams provided an analysis and engineered architectures that illustrated TCP/IP and GOSIP/OSI suite coexistence and transition. The document provided a comprehensive overview of the potential benefits and difficulties that arise when implementing convergence architectures. This task was in support of American Systems Corporation for (IC)<sup>2</sup> efforts in developing network architectures for ship to shore, ship to ship and ship internal communications (C<sup>3</sup>I).

## **Messaging and Directory Services Pilot - Phase 1 - OST**

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For (IC)<sup>2</sup> program Mr. Williams conducted a Messaging and Directory Services Pilot (MDSP) in a phased approach. The purpose of this pilot is to validate advanced fleet messaging and directory services. The pilot technology proved interoperability, manageability, and implemented designated DoD messaging technology.

In the (IC)<sup>2</sup> MDSP - Phase I, the program validated basic messaging, as well as messaging with graphical/audio/video attachments. Connection options between participating sites were also tested. This included X.400 P1 MTA-MTA communications via the RFC-1006 transport standard as well as SMTP message transfer via TCP/IP. A demonstration of the pilot technology was done at the InterOp Fall '92 show network. This work was performed under a subcontract to American Systems Corporation.

## **Messaging and Directory Services Pilot (Messaging) - Phase 2 - OST**

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In the Messaging and Directory Services Pilot - Phase 2, Mr. Williams augmented the Phase I activity with the implementation of wireless messaging, and messaging services. Including e-mail via fax technology, remote file retrieval via e-mail, remote file fax via e-mail, receipt notification, Electronic Data Interchange and the physical reproduction (printing) of messages on receipt.

## **Messaging and Directory Services Pilot (Directory Services) - Phase 2 - OST**

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In the Messaging and Directory Services Pilot - Phase 2, Mr. Williams implemented internetworked X.500 Directory System Agent and Client applications using X.500 DAP and DSP over TCP/IP between participating systems. Mr. Williams established participation in the PSI/Internet White Pages Project pilot. This pilot also provided connectivity to the worldwide PARADISE X.500 directory pilot. Also, the functionality of X.500 based information retrieved to the desktop was implemented. This represented the first successful pilot implementation of X.500 technology in the integrated environment test at Wallops Island, MD implementation

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The following is a sample of the background and experience Mr. Williams has accumulated over his many years of skill and personal development in the computer and communications field:

## Programming

C, C++, Ada, Prolog, BASIC, COBOL, FORTRAN, Pascal, HTML; UNIX shell scripting using csh, ksh, sh, bash, awk, sed, perl, CGI and many other macro languages and programming environments.

## Operating System / Environment

DOS all versions, Windows all versions including Windows 2000, Bayan VINES, Novell Netware, SunOS, SunOS/Solaris, OpenWindows, SGI IRIX, BSD-386, Linux, SCO UNIX, OS/2, Coherent 4.x, DR-DOS, Concurrent DOS, Desqview, X Window, VMS, MVS, RTOS; Macintosh System 6-9, A/UX (Macintosh UNIX), HP/UX, AIX; Plan 9, Numerous OS platforms too numerous to list have been utilized.

## Computer Communications Networking and Protocols

Ethernet; Wireless Ethernet; FDDI, Token Ring, ATM, ATM LAN Emulation, SONET, ISDN, SMDS, xDSL, Frame Relay, X.25, Protocols: SPX/IPX, XNS Protocols, Vines IP, NetBIOS/NetBEUI, Client/Server protocol design/implementation; IPS protocols: DNS, TCP, IP, UDP, ICMP, POP 1-3, IMAP 2-4, IRC, SMTP, NNTP, NTP, OSF DCE protocols, Sun RPC, HTTP, FTP, RFC1006 implementation, MIME, Mobile-IP, RIPS0, OSPF, RIP, IGRP, EGP, BGPv4, Telnet, Gopher, IP over ATM, SNMP; sockets, streams implementation and analysis; active participation in several IETF working groups concerning IPS protocol R&D and RFC development (IPv6, Routing, Encryption protocols, Directory and Messaging services primarily); OSI Suite of protocols: X.400 (X.420 - EDI), X.500, FTAM, VT, CMIP, GNMP, OSI Application Protocol Gateways; Application Protocol gateway implementation and analysis. Extensive experience with router implementation including POTS network integration, Leased line implementation. Cisco, Bay Networks, Cabletron, Timeplex, hub and router implementation. *Note: Mr. Williams worked extensively, debugging protocol anomalies, in IPS and OSI protocol and user agent implementations, with The Wollongong Group (a principle developer of the original TCP/IP implementations) while implementing X.500 Directory and X.400 Messaging Services using RFC-1006 implementations.*

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Information Brokers, Inc. is also a well known supplier of Web portal and eMail List Hosting Services to the following:

Black Geeks Online, Inc. - <http://www.BlackGeeks.net/>

The Afrikan Frontline Network - <http://afrikan.net/>

Information Brokers, Inc. - <http://InfoBro.com/>

CA-FAM III, Inc. a 501(c)3 - <http://www.InterCHANGE.org/>

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**Mr. Williams is married to Wanda Moore-Williams and has two children.**

***References are available upon request.***