

September 1992

# TAX SYSTEMS MODERNIZATION

## Concerns Over Security and Privacy Elements of the Systems Architecture



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United States  
General Accounting Office  
Washington, D.C. 20548

Information Management and  
Technology Division

B-248857

September 21, 1992

The Honorable John Glenn  
Chairman, Committee on  
Governmental Affairs  
United States Senate

Dear Mr. Chairman:

On April 2, 1992, we testified before your Committee that the Internal Revenue Service (IRS) is now giving priority attention to ensuring that security and privacy issues are appropriately addressed in its Tax Systems Modernization (TSM) program.<sup>1</sup> Subsequently, on April 28, you asked that we continue evaluating the security and privacy elements of TSM. This report presents the results of our review of TSM's Security Architecture and IRS' efforts to incorporate features into that architecture to protect the privacy of taxpayer information. Details on our objective, scope, and methodology appear in appendix I.

## Results in Brief

We identified four basic concerns with the security and privacy elements of TSM.

- The Security Architecture does not provide details on how processing of taxpayer information and other data will continue without major interruption under disaster recovery conditions.
- The architecture does not describe specifics of how user identification codes and profiles will be managed to appropriately control access to taxpayer information in the system.
- Contrary to standard practice, organizational units involved in administering, developing, and testing the software that controls system security are not independent of each other.
- There is no one person or organization accountable for incorporating privacy protection features into the architecture.

On June 25, we briefed IRS officials, including the agency's Chief Information Officer (CIO), on our concerns. These officials agreed with our concerns in each case and the CIO described actions planned or underway to address them. These actions were confirmed in a September 4, 1992,

<sup>1</sup>Tax Systems Modernization: Progress Mixed In Addressing Critical Success Factors (GAO/T-IMTEC-92-13, Apr. 2, 1992).

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letter from the Commissioner of Internal Revenue, providing comments on a draft of this report.

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## Background

TSM is an \$8 billion program to modernize IRS' 1950s-era tax processing systems by the year 2001. Because these systems contain sensitive taxpayer information, great care must be exercised in planning, designing, and implementing the modernization so the security of this information is maintained and taxpayers' privacy is assured.

In June 1991 testimony before your Committee,<sup>2</sup> we pointed out that while IRS' draft Design Master Plan for TSM provided for developing security features that should help protect taxpayers' privacy, the plan did not recognize privacy as a discrete issue or show how it was to be addressed. This is a serious omission because IRS intends to allow public access, under certain conditions, to information in some of its modernized systems. Further, it was congressional concerns over the security of taxpayer information that helped doom an earlier attempt by IRS to modernize its systems.

In our April 1992 testimony, we noted that IRS is now giving priority attention to ensuring that security and privacy issues are appropriately addressed.<sup>3</sup> IRS has finalized its master plan, which now includes privacy as a discrete issue. The agency also has an information systems architecture that serves as the blueprint for how IRS intends to process tax returns and taxpayer information using state-of-the-art information systems technology. This architecture, known as the Tax Processing Systems Architecture, includes a principal contributing architecture for security—known as the Security Architecture—to safeguard taxpayer information and protect taxpayer privacy. We also testified that IRS had initiated a privacy project to (1) inventory and catalogue databases throughout the agency containing tax return and taxpayer information, (2) identify existing privacy protections, and (3) highlight where improved security over taxpayer information is needed.

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<sup>2</sup>Tax System Modernization: Attention to Critical Issues Can Bring Success (GAO/T-IMTEC-91-8, June 25, 1991).

<sup>3</sup>GAO/T-IMTEC-92-13, Apr. 2, 1992.

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## Concerns Over Security and Privacy Elements of TSM

Notwithstanding the actions described above, we identified four concerns we had with TSM's security and privacy elements.

First, the Security Architecture failed to describe how taxpayer information and other data will continue to be processed during recovery from a major disaster, such as fire, earthquake, flood, or sabotage. To be complete, the architecture should describe in detail the means by which IRS intends to counter interruptions to processing its work load. For example, it should describe how and where the work load of IRS' 10 service centers is going to be processed in the event one or more of those centers experience a breakdown or failure of tax processing systems.

A second concern is the architecture's lack of specificity on how user identification codes and user profiles will be managed. User identifiers and profiles are designed to verify the identity of authorized users, specify their privileges, and detect unauthorized users of tax-related information. In this connection, IRS employees are denied access to any taxpayer information that is not needed to carry out their duties. For example, access to some tax-related information, such as collection files, is denied to taxpayer services personnel who are not authorized to access that information. IRS personnel are also precluded from having access to information involving their spouses and fellow employees. This is significant because IRS personnel are sometimes reassigned among different tax processing sections. When such reassignments occur, user profiles must be revised for the reassigned personnel as well as for personnel already working in the sections to which the reassignments are made. These revisions to the profiles are needed to prevent individuals from gaining unauthorized access to tax-related information. When quick reassignments occur, such as when increasing work loads of some processing sections require immediate transfer of personnel (typical of tax filing season demands), the user profiles of individuals affected by the transfers must be swiftly revised.

Our third concern involves the lack of independence among those individuals responsible for (1) administering the security program, (2) developing the security software, and (3) ensuring the quality of the software. The security software is the primary tool for administering the security program. It is the means by which the confidentiality, integrity, and availability of the tax-related information is maintained, validated, and monitored throughout the agency. A security architecture should describe how any unauthorized changes to that software are to be prevented. A generally accepted control is to separate the software users (i.e., security

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administrators), developers, and testers from each other. However, these groups are currently all within the same organization, the Security and Communications System Project Office.

Our fourth concern involves the lack of accountability over efforts to protect the privacy of taxpayer information. Currently, IRS has three key organizational units involved in privacy protection: the Security Architecture Program within the Office of Information Systems Development, the Privacy Project within the Office of Information Systems Management, and the Office of Disclosure within the Office of the Assistant Commissioner for Examination. We found little interaction or coordination among these units. For example, we were told that, in March 1992, officials within the Privacy Project identified weaknesses in IRS' privacy protection safeguards and made recommendations on how to better protect taxpayer privacy. Some of these recommendations pertain to the modernized systems. However, as of June 1992, these recommendations had yet to be conveyed to Security Architecture Program officials for possible incorporation into the Security Architecture.

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## Agency Actions to Address Our Concerns

On June 25, 1992, we briefed IRS' CIO and other responsible IRS officials on each of our concerns. They agreed with our findings and described actions planned or underway to address each concern. These actions, as described below, were confirmed in a September 4, 1992, letter from the Commissioner of Internal Revenue, providing comments on a draft of this report.

The CIO said that disaster recovery details have been prepared and are undergoing final executive-level review prior to their inclusion in the next version of the Security Architecture, which will be issued in March 1993.

With respect to managing user identification and profiles, the CIO stated that detailed procedures are the responsibility of the Security and Communications System program. He added that program personnel have already been tasked with the responsibility for preparing these procedures for inclusion in the next version of the architecture.

According to the CIO, independence among the security software developers and testers is to be achieved by using personnel within the Quality Assurance Division of the Office of Information Systems Management to perform quality assurance testing required for ensuring the security of systems. Additionally, the CIO said that an independent group

might be used to test and ultimately certify the security software's integrity. He suggested that an interagency agreement could be a way to acquire the independent test and certifying group. Further, the Security and Communications System Project Office would continue to develop the security software. The CIO added that the issue of separating the security administrators' and software developers' roles is to be worked out by IRS' Executive Committee.<sup>4</sup>

According to the CIO, providing accountability for protecting taxpayer privacy is part of a draft report from the Privacy Project to IRS' Information Systems Policy Board.<sup>5</sup> The report is before the Board for final review and approval, and its recommendations will be considered while the next version of the Security Architecture is prepared. The CIO further stated that the accountability issue will be presented to IRS' Executive Committee for resolution. He said he is hopeful that responsibility for protecting the privacy of taxpayer information will reside with an individual or specified group.

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## Conclusions

IRS has made progress in addressing our concerns about the security and privacy aspects of TSM. The agency plans to complete actions in some of these areas—disaster recovery and managing user identification and profiles—when the next version of the Security Architecture is issued in March 1993. It is uncertain, however, when actions will be completed in the other areas—independence among security software administrators and developers, and accountability for protecting taxpayer privacy. Part of the problem is the lack of a firm deadline for resolving these issues and the need for coordination among several organizations within IRS.

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## Recommendations

We recommend that the Commissioner of Internal Revenue, as Chair of IRS' Executive Committee, separate the security administrators' and software developers' roles, and designate responsibility for protecting the privacy of taxpayer information. We further recommend that the Commissioner establish a deadline for resolving these concerns.

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<sup>4</sup>The IRS Executive Committee consists of the Commissioner, the Deputy Commissioner, the Chief Operations Officer, the Chief Financial Officer, and the CIO. The Committee is the top policymaking body within IRS.

<sup>5</sup>IRS' Information Systems Policy Board is an oversight group consisting of the CIO and several other senior executives. The Board approves, oversees, and coordinates all information systems development projects, as well as operational information systems. It also sets policy and standards affecting information systems development and operations.

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## Agency Comments

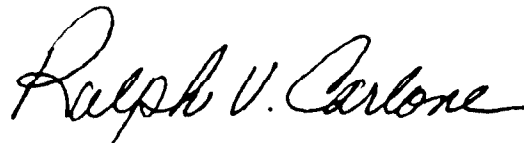
We received written comments on a draft of this report from the Commissioner of Internal Revenue. IRS agreed with our findings, conclusions, and recommendations, and confirmed the actions IRS' Chief Information Officer and other agency officials would be taking to respond to our findings. IRS' comments are reprinted in their entirety in appendix II and have been incorporated in the report as appropriate.

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We conducted our review at IRS headquarters in Washington, D.C., between September 1991 and June 1992, in accordance with generally accepted government auditing standards.

As agreed with your office, unless you publicly announce the contents of this report earlier, we plan no further distribution until 30 days from the date of this letter. We will then send copies to the Secretary of the Treasury; the Commissioner of Internal Revenue; the Director, Office of Management and Budget; and interested congressional committees. Copies will also be made available to others upon request. This report was prepared under the direction of Howard G. Rhile, Director, General Government Information Systems, who can be reached at (202) 512-6418. Other major contributors are listed in appendix III.

Sincerely yours,



Ralph V. Carlone  
Assistant Comptroller General



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# Objective, Scope, and Methodology

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We reviewed IRS' Tax Processing Systems Architecture, focusing in particular on the contributing architecture for security. Our objective was to determine IRS' progress in developing these architectures, including the agency's efforts to incorporate features to protect the privacy of taxpayer information.

We examined the architectures, including updates, as well as documentation for the Privacy Project. The architectures were reviewed to determine their completeness and technical feasibility. We also reviewed Privacy Project material to determine its relationship to the Security Architecture. We interviewed IRS managers responsible for (1) the design and development of the architectures in the Office of Information Systems Development (ISD), (2) the Privacy Project in the Office of Information Systems Management, and (3) the Security and Communications System program in the Security and Communications Project Office within ISD.

We performed our work at IRS headquarters in Washington, D.C. We provided a draft of our report to IRS for comment, and the agency provided written comments on our findings, conclusions, and recommendations. IRS' comments were incorporated in the report as appropriate.





# Comments From the Internal Revenue Service



COMMISSIONER

DEPARTMENT OF THE TREASURY  
INTERNAL REVENUE SERVICE  
WASHINGTON, D.C. 20224

SEP - 4 1992

Mr. Ralph V. Carlone  
Assistant Comptroller General  
United States General Accounting Office  
Washington, DC 20548

Dear Mr. Carlone:

Thank you for the opportunity to review your recent draft report entitled, "Tax Systems Modernization: Concerns Over Security and Privacy Elements of the Systems Architecture" (IMTEC-92-63). We generally agree with the report recommendations and are planning appropriate corrective actions. As you know, we consider the security and privacy of tax information to be a critical component of Tax Systems Modernization and appreciate your oversight and assistance in this area.

We agree with the standard practice of separate and independent organizations to design, develop, test and administer systems security and have such an organizational structure in place. The Chief Information Officer will be working with the Assistant Commissioners (Information Systems Development) and (Information Systems Management) to resolve any confusion at the IRS staff level that possibly contributed to the misunderstanding of the roles and responsibilities in the security and privacy area.

The Assistant Commissioner (Information Systems Management) is responsible for security administration of current systems. The Assistant Commissioner (Information Systems Development) is responsible for designing and developing security and internal controls for the new TSM systems. As new systems are developed, they are tested by an independent quality assurance function to ensure that the systems operate as intended and all internal controls and security features work. The Security and Communications System, the overall security system for TSM, will not be tested by the Security and Communications Project Office involved in the design and development of that system, but by another organization with external expert assistance.

We agree that we should document our plans for disaster recovery and user profile management and administration. We are developing a TSM disaster recovery strategy that will describe how tax processing will continue under disaster recovery conditions. Additionally, details for user profile management and administration will be documented as the design of the security system is developed and requirements are identified.

**Appendix II  
Comments From the Internal Revenue  
Service**

A multifunctional IRS task force, chartered by the Chairman of the Information Systems Policy Board, has developed the privacy requirements for TSM and the IRS as a whole. Representatives from key organizational units participated in the effort and have prepared a privacy project report, currently in clearance, that defines the privacy program requirements and recommends a central organization to address ongoing privacy issues. Once the privacy project report is formally approved, we will move quickly to implement its recommendations.

We believe these actions will alleviate the concerns raised in your report. We appreciate the effort your staff has devoted to this review and agree that security and privacy are important elements in the Modernization effort. We look forward to working with you in future reviews in support of Tax Systems Modernization.

Best regards.

Sincerely,

  
Shirley D. Peterson

# Major Contributors to This Report

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