Information Security Updates

End User Computing

Issue 12

I. Background

Industry Story

The Problem with Unmanaged End User Computing Applications

Researches revealed that about 68% of an enterprise's corporate data is stored in applications managed and controlled by IT department. The other 32% of corporate data is stored in Microsoft Excel spreadsheets, other databases (e.g. Microsoft Access), business intelligence tools (e.g., reporting tools), Microsoft Word documents, web-oriented architecture "mashup" approaches and other end user computing applications. Often the 32% portion of corporate data exists in relatively uncontrolled environments and may lack the same safeguards and controls applied to the 68% portion of corporate data under the IT Department control.

Such deficiency in safeguards and controls can result in negligent errors, as was the case with TransAlta Corp., which took a $24 million charge to earnings after a bidding error caused by a cut-and-paste mistake in an Excel spreadsheet. The lack of adequate safeguards and controls can also permit dishonest users to engage in fraud, as happened with AIB's Allfirst Bank, where a trader hid a $700 million loss by substituting links in a company spreadsheet to his private manipulated spreadsheet. For regulated enterprises, this can lead to regulatory compliance issues.

See the article:
(http://blogs.msdn.com/b/grc/archive/2009/07/01/the-problem-with-unmanaged-end-user-computing-applications.aspx)

End User Computing Overview

End User Computing ("EUC"), also known as User Developed Applications ("UDA") is a popular approach that involves end users with non-programming knowledge in design, creation and maintenance of working applications. Unlike conventional program development, assembling EUC programs is performed at application level of existing software packages. For examples, formulae entered in Microsoft Excel spreadsheet, analysis programs made by Statistical Analysis System ("SAS") and macros embedded in Microsoft Word.

From end users' perspective, the use of EUC is convenient and efficient, as it can be created and maintained locally. However, when talking about information security, EUC has a new set of problems, including weak access control, uncontrolled change process, higher possibilities of mistakes and loss of data. Poor management of EUC could eventually lead to exploitations on those security vulnerabilities.

Related Article

Spreadsheets in Education – The First 25 Years

Spreadsheets made their first appearance for personal computers in 1979 in the form of Visi- Calc, an application designed to help with accounting tasks. Since that time, the diversity of applications of the spreadsheet program is evidenced by its continual reappearance in scholarly journals. Nowhere is the Excel application becoming more marked than in the field of education. From primary to tertiary levels, the spreadsheet is gradually increasing in its importance as a tool for teaching and learning.

(http://www.scribd.com/doc/4950286/Spreadsheets-in-Education)

Related Article

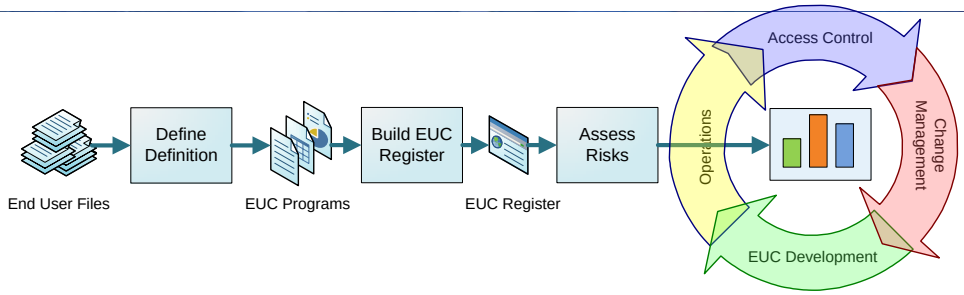
End User Computing and Information Security

End user computing became very popular in the late 1980s, and had become the norm in organisations by the mid 1990s. This paper examines the opportunities and challenges presented to organisations by end-user computing, and the emergence of information risk in connection with this (then) new phenomenon.

(http://eprints.worc.ac.uk/875/2/hensonukais2010.pdf)

II. Management

EUC programs that store and manipulate important information (e.g. financial figures, examination records, research data) of universities should be subject to same level of general IT controls implemented on applications controlled by IT department. Nevertheless, since the IT departments do not own those EUC programs, the first step towards effective EUC management is establishing a EUC control policy, covering the following elements:



Definition

Each academic or administrative unit may have different interpretations of EUC applications, which may result in obstacles during the implementation of EUC controls. Management should provide clear definition of EUC programs and communicate to universities' staff, students and any relevant members.

EUC Register

A EUC register should be created by each academic or administrative unit to record all existing EUC programs. The nature of EUC programs should be identified and categorised into corresponding classes (e.g. financial, academic, operational, and informational). In addition, the ownership, including the owner's name and respective academic or administrative unit, of each EUC program in the register should be documented. Management should also ensure that the EUC register is regularly updated to avoid any incorrect information kept within.

Risk Assessment

The risk assessment process evaluates the risk level of each EUC programs in the EUC register based on its nature and the classification of information (e.g. confidential, internal and public) it stores/manipulates, considering the following risks due EUC errors or frauds:

- **Financial Risk** – Financial misstatement
- **Academic Risk** – Incorrect research conclusions of findings
- **Operational Risk** – Impact or interruption to operations
- **Informational Risk** – Misleading information

Based on the risk assessments results (e.g. high, medium low), adequate level of security controls can be deployed for EUC programs, which helps to better utilise the limited resources for EUC management. The risk assessments should be performed at least once each year to ascertain the validity of assigned risk levels and maintain the appropriateness of the controls implemented over EUC programs.

Related Article

Are You Managing Your Spreadsheet Risk?

As the importance and complexity of spreadsheets grow, the risk of errors or frauds has increased dramatically.

The increased regulation and compliance that now impacts spreadsheet control is not surprising given that the past few years have seen numerous multimillion-pound errors and frauds attributed to the use of spreadsheets. This regulatory pressure and increasing focus from auditors is forcing organisations to address the issue of spreadsheet risk management, though few really understand how to improve this process

(http://www.cimaglobal.com/Thought-leadership/Newsletters/Insight-e-magazine/Insight-Archive/Are-you-managing-your-spreadsheet-risk/)

Related Article

End User Computing Strategy: An Examination of Its Impact on End-user Satisfaction

Organisational attitudes and expectations regarding EUC changed radically in the past 25 years and have researchers describing end-user computing as a vital component of the overall information resource in the organisation.

As the level of organisational EUC activities continues to grow, the EUC strategy utilised by the organisation can increase end-user satisfaction and have a positive influence on end-user behavior. In addition, it not only affects end-user satisfaction but overall satisfaction with the organisation.

(http://findarticles.com/p/articles/mi_m1TOK/is_6/ai_n25009529/?tag=mantle_skin;content)

References:
http://endusercomputing.org/2009/09/14/euc-best-practice-2-implement-an-euc-control-policy/

II. Management (Cont'd)

Control Requirement

Based on the classes and risk levels of EUC programs, the minimum requirements on EUC controls can be determined. Similar to IT general controls, typical EUC controls come from the following four areas:

- **Access Control:**

  Logical or physical controls determine who can access specific EUC programs and what is the authorisation procedure required. For high risk EUC programs, the number of authorised personnel should be restricted to minimum. Granting access to EUC programs are usually done by the EUC owners. Documented evidence on access authorsiations should be retained for further reference or investigation purpose.

- **Change Management (Version Control)**

  Changes to existing EUC programs are made in a controlled manner. The owners of EUC programs should review the change requests. High risk EUC program changes may also require the endorsement from the senior management. Before officially using the changed EUC programs, independent testing of changed EUC programs should be performed to ensure there are no mistakes, such as miscalculation and program errors. Documentations related to change requests (e.g. e-mails, request forms) and testing (e.g. test case, test result) should be maintained for each version of EUC program.

- **EUC Development**

  Controls over EUC development are similar to those implemented for EUC changes. It is EUC owners' responsibilities to ensure that all new EUC programs are developed with their consent and properly tested before being officially used by end users.

- **Operations**

  Backup, restoration and problem management are the key components of EUC operations controls. Management may take a centralised approach (i.e. performing backup, restoration and problem management for EUC programs centrally by IT department) or execute the operations controls in a distributed way (i.e. each academic or administrative unit back up, restore and provide troubleshooting services for its own EUC programs).

Monitoring

Periodic review or internal audit on the relevant controls over EUC programs are recommended to be performed by universities. The purpose of doing this is to assess the effectiveness of EUC management adopted by the universities and detect any deficiencies (e.g. deviation from established control requirement, missing control area, etc.).

Management should review the identified deficiencies, coordinate with corresponding EUC owners to work out the remediation plan and track the remediation process.

Recent Incident

Cohmad Fined $200k in Madoff Case for Failure to Keep Spreadsheet Records

A spreadsheet fraud surfaced today in the Boston Globe. Cohmad Securities Corp., was fined $200,000 for failure to cooperate with Massachusetts state investigators inquiring about Cohmad's role in the Madoff ponzi scheme.

Apparently, Cohmad failed to maintain proper books and records of their trading operations, including a spreadsheet used to track client's Madoff accounts. The state was tipped off when they found out that Cohmad had received $37.4 million in fees from Madoff's firm between 2003 and 2007, which accounted for 90% of their revenues.

(http://endusercomputing.org/category/cases-of-fraud-errors/)

Related Article

"Mission Critical" Spreadsheets in a Large Urban University

University of Massachusetts Amherst Boston is a comprehensive urban university with about 13,000 students and over 80 degree programs. Its complex managerial environment has raised an issue about how "mission critical" spreadsheets are used or managed.

A survey has been carried out and revealed several key facts regarding spreadsheets, such as major owner groups, typical usage, useful life, and the level of management for these critical information resources.

(http://sprig.section.informs.org/sprigfiles/Mission_Critical_Spreadsheets.ppt/)

References:
http://endusercomputing.org/2009/09/14/euc-best-practice-2-implement-an-euc-control-policy/

Industry Practice

The Use of spreadsheets: Considerations for Section 404 of the Sarbanes-Oxley Act

As users of spreadsheet applications such as Microsoft Excel or Lotus 1-2-3 have become more sophisticated, the requirements under Section 404 of the Sarbanes-Oxley Act increase the focus on controls related to the development and maintenance of spreadsheets.

To achieve compliance with Sarbanes-Oxley Section 404, a series of steps, such as establish spreadsheet inventory, evaluate impact and determine necessary level of controls, should be considered.

(http://www.auditsoftware.net/community/excel/PwCwpSpreadsheetsSection404Sarbox.pdfa)

Related Article

Preventing Errors and Fraud in Spreadsheets

The spreadsheet is one of the most brilliant software tools for almost any industry including accounting and finance. However, because everyone is so comfortable with them, spreadsheets can be excellent tools for committing fraud or for material errors. Spreadsheets therefore become a least expected weak-link in financial statement or operational data analysis.

The main cause for spreadsheet issues is that they do not follow a standard software development lifecycle. Unlike most professionally-written applications, spreadsheets are generally not created with a robust control process in mind.

(http://accounting.smartpros.com/x48253.xml)

III. General Users

Best Practice to be Followed by General Users

To use EUC programs safely and effectively, the general users are recommended to follow the practice below:

- **Familiarise with EUC Policy** – The very first step for using EUC programs is to familiarise with the EUC control policy. Users must be able to know what is a EUC program, who is the owner, what is the procedure to change the EUC program, and whom should be contacted if the EUC program is accidently deleted / modified.

- **Avoid Unauthorsied Access** – Users are recommended to utilise the security functions that come along with the software packages. For example, password protection features in Microsoft Excel spreadsheets. The passwords should not be disclosed to unauthorised parties and should be changed regularly.

- **Avoid Mistakes –** When using EUC programs, it is important to use the correct versions before storing or processing the data. Wherever possible, manual reconciliation/verification on EUC program output should be performed. If the mistakes are related to EUC programs instead of manual errors, corresponding EUC problem management procedure should be followed by users. In addition, users should consider incorporating input validation controls when developing or updating the EUC programs to reduce to the possibilities of having incorrect results.

Conclusion

The convenience and flexibility of EUC has made it one of the most important IT components in universities' computing environment. Good management of EUC allows universities to maximise the benefits of EUC and avoid the damage or loss caused by its vulnerabilities. General users can also increase their efficiency through the correct use of EUC programs and consistently following the EUC policy.

References:
http://www.isacapgh.org/07%20Event%20Archive/February_ISACA_0Presentation.pdf
http://endusercomputing.org/category/best-practices/