

Ohio Lottery Commission



Video Lottery
Minimum Internal Control Standards

Information Technology

OHIO LOTTERY COMMISSION
MINIMUM INTERNAL CONTROL STANDARDS

INFORMATION TECHNOLOGY

Terms and Definitions

1. **Backup System Log** - An event log, a job log or an activity file created by the program or batch process that performs backups of application and data files. These event logs, job logs or activity files usually provide detail on the type of backup performed, success or failure of the operation, and a list of errors.
2. **Critical IT Systems and Equipment** - includes all components of systems hardware and software, application software, and database software that individually or in combination are necessary for the stable operation of gaming systems. The term does not include user terminals.
3. **Default Accounts** - User accounts with predefined access levels usually created by default at installation for operating systems, databases, and applications. These accounts tend to be used for training purposes.
4. **Generic User Accounts** - User accounts that are shared by multiple users (using the same password) to gain access to gaming systems and applications. User accounts established by/for and used by manufacturers of the system for vendor support purposes are not considered to be generic accounts.
5. **Group Membership (group profile)** - A method of organizing user accounts into a single unit (by job position) whereby access to application functions may be modified at the unit level and the changes take effect for all user accounts assigned to the unit. A user account may be assigned to one or more groups.
6. **Hosting Center** - An entity unaffiliated with a licensee and hosting on its premises any part(s) of OLC regulated hardware or software.
7. **IT Personnel** - Employees of the licensee/operator or an IT service provider who are independent of the gaming department; and have been designated to perform the information technology function for the operation of critical IT systems and equipment. The term is not limited to employees within an IT department.
8. **IT Service Provider** – A person or an entity engaged by the licensee, and licensed by the OLC, to provide management, including system administration, user access administration, support, security, or disaster recovery services for OLC regulated hardware or software.
9. **Physical and Logical Segregation of the Development and Testing from the Production Environment** - Separating the development and testing of new software in an environment that is isolated from the regular production (live) network. The development environment is located on a separate server and developers are precluded from having access to the production environment.
10. **Secured Repository** - A secured environment that is used to store software source code once it has been approved for introduction into the production (live) environment. The repository is secured such that developers cannot modify code once it has been stored. In this way, the repository provides a history of a given software system ordered by version.
11. **Service Accounts** - Accounts on which automated system functions (services) are dependent to execute. A service account does not correspond to an actual person. These are often built-in accounts that an automated system function (service) uses to access resources they need in order to perform its activities. However, some automated functions may require actual user accounts to perform certain functions and may be employed using domain accounts to run services.
12. **System Administrator** - The individual(s) responsible for maintaining the stable operation of the IT environment (including software and hardware infrastructure and application software) and/or has system authorization/access to perform the following administrative function(s):
 - Add, change, or delete user accounts and associated user provisioning for database, operating system, and network layers (may also include user access administrator function for an application layer);
 - Modify operating system, database, and application security and policy parameters;
 - Add, change, or delete system exception logging information; or
 - Add, change, or delete permissions to data files and folders.
13. **User Access Administrator** - The individual(s) responsible for and has system authorization/access to add, change, or delete user accounts and associated user provisioning. User provisioning consists of

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assigning application functions matching the employee's current job responsibilities, unless otherwise authorized by management personnel, to ensure adequate separation of duties.

14. **Vendor Supported System** - One type of critical IT systems and equipment where the source code is supported solely by the manufacturer of such system. The manufacturer support of source code does not include performing the function of a "system administrator" or a "user access administrator" when the system is in use by the licensee.

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- Note 1: Unless otherwise specified, all Information Technology (IT) MICS apply to gaming related applications and the underlying databases and operating systems.
- Note 2: Deleted (non-gaming related systems).
- Note 3: The IT MICS do not apply to the racino's pari-mutuel system.
- Note 4: The types of gaming related applications (including version numbers used) and the procedures and records used to comply with IT MICS #1 - #28, as applicable, must be addressed in detail in each applicable section of the Standard Operating Procedures (SOPs). The Information Technology section of the SOPs includes the procedures and records used to comply with IT MICS #29 - #60, as applicable.
- Note 5: If an IT service provider is used for gaming related applications, including the underlying databases and operating systems, the racino's SOP is to identify the IT service provider and is to delineate the IT functions performed by the IT service provider to comply with IT MICS. The racino remains ultimately responsible to ensure the proper design and implementation of the procedures required to meet all applicable IT MICS, regardless of who is performing the IT function.
- Note 6: Deleted (definitions).

Physical Access and Maintenance Controls

1. The critical IT systems and equipment for each gaming application (e.g., VLTs, TITO systems, etc.) are maintained in a secured area (secured area includes a hosting center). The area housing the critical IT systems and equipment for each gaming application and other critical IT systems and equipment are equipped with the following:
 - a. Redundant power sources to reduce the risk of data loss in case of interruption of power.

Note: MICS #1(a) does not apply to components in the VLT gaming device cabinet.
 - b. Adequate security mechanisms, such as traditional key locks, biometrics, combination door locks, or an electronic key card system to prevent unauthorized physical access to areas housing critical IT systems and equipment for gaming applications.
 - c. The administration of the electronic security systems, if used to secure areas housing gaming critical IT systems and equipment, is performed by personnel independent of a gaming department.

Note: The Standard Operating Procedures (SOPs) are to delineate the methods, processes and practices used in meeting the requirements of MICS # 1 (a through c).
2. Access to areas housing critical IT systems and equipment for gaming applications, excluding vendor supported systems, is restricted to authorized IT personnel. Gaming department personnel, including the manufacturers of the gaming computer equipment, are only allowed access to the areas housing critical IT systems and equipment for gaming applications, excluding vendor supported systems, when authorized by IT personnel and with periodic monitoring by IT personnel during each access.
3. A record of each access described in the previous standard by non-IT personnel is maintained and includes at a minimum:
 - a. The name of the visitor(s);

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- b. Time and date of arrival;
 - c. Time and date of departure;
 - d. Reason for visit; and
 - e. The name of IT personnel authorizing such access.
4. Access to an area housing a vendor supported system for gaming applications is restricted to authorized IT personnel, or by system manufacturer's personnel when authorized by management and with periodic monitoring during each access by IT personnel or personnel independent of the department using such application.
5. A record of each access described in the previous standard by the system manufacturer's personnel is maintained and includes at a minimum:
- a. The name of the visitor(s);
 - b. Time and date of arrival;
 - c. Time and date of departure; and
 - d. Reason for visit.

System Parameters

6. The computer systems, including gaming related application software, are logically secured through the use of passwords, biometrics, or other means approved by the OLC. Security parameters for passwords, if configurable, shall meet the following minimum requirements:
- a. Passwords are changed at least once every 90 days.
 - b. Passwords are at least 8 characters in length and contain a combination of at least two of the following criteria: upper case letters, lower case letters, numeric and/or special characters.
 - c. Passwords may not be re-used for a period of 18 months; or passwords may not be re-used within the last ten password changes.
 - d. User accounts are automatically locked out after 5 failed login attempts.

Note 1: The Standard Operating Procedures (SOPs) are to delineate whether the system is configurable for security parameters for passwords, and to what extent the system is configurable in meeting the security parameter requirements.

Note 2: MICS #6 does not apply to service accounts and generic user accounts.

Note 3: For MICS #6(d), the system may release a locked out account after 30 minutes has elapsed. If an employee assists with releasing a locked out account and is reasonably certain of no unauthorized user access (if such information can be provided by the system and is readily available to the employee assisting in unlocking user account), the elapsed time of 30 minutes is not applicable. The involvement of an employee assisting in the release of a locked out account is to be delineated in the SOPs.

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7. A system event log or series of reports/logs for operating systems (including the database and network layers where applicable) and gaming applications, if capable of being generated by the system, is configured to track the following events:
- a. Failed login attempts.

Note: If configurable by the system, parameters may be set so that only certain attempts are flagged for review (e.g., failed login attempts exceeding a certain number or failed login attempts to a specific address are flagged for review).
 - b. Changes to live data files occurring outside of normal program and operating system execution.

Note: Databases and operating systems are to be configured to monitor for and record manual edits and modifications made by users (not automatically by programs or operating systems) to data files and database tables belonging to gaming systems.
 - c. Changes to operating system, database, network, and application policies and parameters.

Note: Policies and parameters include, but are not limited to:
 - Audit settings (types of events that are monitored and logged)
 - Password complexity settings (minimum length, maximum age, etc.)
 - System security levels (AS/400, QSecurity)
 - Point structure in players club systems
 - d. Audit trail of information changed by administrator accounts. Information logged, if configurable, is to include the events related to the functions described in the definitions of “system administrator” and “user access administrator”. Administrator account activity logs, if provided by the system, are to include:
 - i. Account login name;
 - ii. Date and time of event;
 - iii. Description of event;
 - iv. Value before the change; and
 - v. Value after the change.
 - e. Changes to date/time on master time server.

Note: For MICS #7 the SOPs are to delineate separately for each layer of the system (application, operating system, database and network, where applicable) whether the system is configurable, and to what extent the system is configurable, in tracking specified events.
8. Logs for the events listed in MICS # 7(a) through (c) and (e) are to be maintained by a licensee/operator for a minimum of seven days; the logs in MICS #7(d) are to be maintained for a minimum of thirty days.
9. Daily system event logs are reviewed at least once a week (for each day of the entire previous week) by IT personnel, other than the system administrator, for events listed in MICS #7. The employee(s) responsible for reviewing the system event logs is (are) delineated in the SOPs. Evidence of this review (e.g., log, checklist,

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notation on reports) is maintained for a minimum of 90 days and includes the date, time, name of individual performing the review, the exceptions noted, and any follow-up of the noted exception.

Note 1: For this Standard an automated tool that polls the event logs for all gaming related servers, and provides the reviewer with notification of the above may be used. Maintaining the notification for 90 days may serve as evidence of the review, provided that the date, time, name of individual performing the review of the exceptions noted, and any follow-up of the noted exception are documented in the notification or in a separate document maintained as required by this Standard.

Note 2: IT personnel who review the logs are independent of the system administration and user access administration functions and do not have system access to perform any administrative functions in the systems for which the logs are being reviewed. Alternatively, the licensee/operator may designate an employee outside of the IT department, provided that the employee is independent of the department using the system for which the logs are being reviewed.

Note 3: If an IT service provider maintains and administers gaming related systems on behalf of the licensee/operator:

- The review of the logs is to be performed by IT personnel who are employees of the licensee/operator; or
- If an automated tool is used as discussed in Note 1, the notification is to be provided to IT personnel employed by the licensee/operator.

10. Exception reports (for application level only), if capable of being produced by the system, (e.g., changes to system parameters, corrections, overrides, voids, promotional account adjustments, etc.) for each gaming application related application are maintained and include at a minimum:

- a. Date and time of alteration;
- b. Identification of user that performed alteration;
- c. Data or parameter altered;
- d. Data or parameter value prior to alteration; and
- e. Data or parameter value after alteration.

Note: The SOPs are to indicate the system's capability of producing an exception report (includes listing of specific report[s]) and to what extent this report provides specified information.

User Accounts

Note: MICS #11 through #17 in this section apply to an application level, unless otherwise specified.

11. Management personnel, the IT service provider, or persons independent of the department being controlled, establish, or review and approve, user accounts for new employees. Provisioning for user accounts consist of assigning application functions matching the employee's current job responsibilities, unless otherwise authorized by management personnel, to ensure adequate separation of duties.
12. Provisioning of user accounts for employees who transfer to a new department are performed, or reviewed and approved, by management personnel, or persons independent of the department being controlled. Any previously assigned application function access for the employee's user account is changed to inactive (disabled) prior to the employee accessing their new user account for their role or position in a new department.

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13. User access listings include, if the system is capable of providing such information, at a minimum:

- a. Employee name and title or position.
- b. User login name.
- c. Full list and description of application functions that each group/user account may execute.

Note: This list for MICS #13(c) may be available in a separate report if the menu functions are easily referenced between the user access listing report and the menu function report.

- d. Date and time account created.
- e. Date and time of last login.
- f. Date of last password change.
- g. Date and time account disabled/deactivated.
- h. Group membership of user account, if group membership is used in the system.

Note 1: The Standard Operating Procedures (SOPs) are to indicate the system's capability of producing a user access listing and to what extent the system's listing provides specified information.

Note 2: Deleted (entertainment tax related application).

14. When multiple user accounts for one employee per application are used, only one user account may be active (enabled) at a time if the concurrent use of the multiple accounts by the employee could create a segregation of duties deficiency resulting in noncompliance with one or more MICS. Additionally, the user account has a unique prefix/suffix to easily identify the users with multiple user accounts within one application.

15. The user access administrator and/or system administrator, as applicable, is notified within a reasonable period of time, established by management, when an employee is known to be no longer employed (e.g., voluntary or involuntary termination of employment). Upon notification the user access administrator and/or system administrator changes the status of the employee's user account from active to inactive (disabled) status within a reasonable period of time, established by management. The SOPs delineate the process and reasonable time period in notifying the user access administrator and/or system administrator and the reasonable period of time allowed for the user access administrator and/or system administrator to update the terminated employee's user account and the procedures established in preventing the employee from having unauthorized access to a user terminal.

Note: The reasonable period of time in notifying the user access administrator and/or system administrator and the period of time allowed for the user access administrator and/or system administrator to change the status of the terminated employee's user account assumes that it is relatively unlikely the employee will have unauthorized access to a user terminal during that time period.

16. The user access administrator and/or system administrator, as applicable, is notified as soon as possible when an employee who has a user account with remote access capability is known to be no longer employed (e.g., voluntary or involuntary termination of employment). Upon notification the user access administrator and/or system administrator changes the status of an employee's user account with remote access capability from active to inactive (disabled) status. The SOPs delineate the process in notifying the user access administrator and/or system administrator as soon as possible for immediately updating the terminated employee's user

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account with remote access capability and the procedures established in preventing the employee from having unauthorized remote access.

Note: During the period of time when the employee is no longer employed and until the user account has been disabled, it is assumed that it is relatively unlikely the employee will have unauthorized remote access to the system during that time period.

17. User access listings for gaming applications at the application layer are reviewed quarterly by personnel independent of the authorization and user provisioning processes. The review consists of examining a sample of at least 10% (with a maximum of 25) of the users included in the listing. The reviewer maintains adequate evidence to support the review process, which includes the identified accounts reviewed, documentation of the results of the review, and e-mails or signatures and dates indicating when the user access listing was reviewed. For each of the randomly selected users, determine whether:
- a. The assigned system functions are being used as authorized (i.e., system functions are appropriate for user's job position);
 - b. The assigned functions provide an adequate segregation of duties;
 - c. Terminated employees user accounts have been changed to inactive (disabled) status within the time period determined by management and delineated in the SOPs as required by MICS #15 and MICS #16;

Note: Verification of the time period is not required if the system is not capable of providing a user access listing indicating the date and time of an account being disabled/deactivated. The SOPs are to delineate this reason for not performing a verification of time period.

- d. Passwords have been changed within the last 90 days; and

Note 1: The review for password changes within 90 days applies regardless of whether the system parameter has been configured to have the password changed at least once every 90 days [as required by MICS #6(a)].

Note 2: MICS # 17(d) does not apply when the system is not capable of providing a user access listing indicating the date of the last password change. The SOPs are to delineate this reason for not performing a review for password changes.

- e. There are no inappropriate assigned functions for group membership, if group membership is used in the system.

Note 1: MICS #17(e) applies to a review of the assigned functions for the selected user account with group membership.

Note 2: Deleted (entertainment tax related applications).

Note 3: The review applies to user access listings for computerized gaming systems with the following capabilities:

- Generates reports identifying gaming revenues;
- Generates detailed records of all markers, IOU's, returned checks, hold checks, or other similar credit instruments;
- Generates statistical gaming records required by the MICS; or
- Generates any other records required either by the MICS or by the licensee's system of internal control.

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Generic User Accounts

18. Generic user accounts at the operating system level, if used, are configured such that:
- a. The user is automatically brought to the application logon screen immediately upon logging into the operating system, and the user is logged out of the operating system automatically upon exiting the application; or
 - b. The user is only granted access to the assigned application(s) for the user's current job responsibilities, and the user is precluded from executing unassigned applications or functions from the terminal desktop and is precluded from interactive access to the operating system through the proper security configurations.

Note: The Standard Operating Procedures (SOPs) delineate the method used to secure generic accounts.

19. Generic user accounts at the application level, are prohibited unless user access is restricted to inquiry only functions or is specifically allowed in other sections of the MICS.

Service & Default Accounts

20. Service accounts, if used, are utilized in a manner to prevent unauthorized and inappropriate usage to gain logical access to an application and the underlying databases and operating system. Service account log-in and password information is restricted to a limited number of authorized employees. The employee responsible for the documentation indicating the method used to prevent unauthorized and inappropriate usage of these service accounts (available upon request by authorized internal and external auditors and by OLC personnel) is delineated in the Standard Operating Procedures (SOPs).

Note: Suggested methods include: (1) Service accounts are configured such that the account cannot be used to directly log in to the console of a server or workstation; (2) Service account passwords are to be changed at least once every 90 days, and immediately upon termination of system administrators.

21. User accounts created by default (default accounts) upon installation of any operating system, database or application are configured to minimize the possibility that these accounts may be utilized to gain unauthorized access to system resources and data. The employee responsible for the documentation indicating the procedures implemented to restrict access through the use of default accounts (available upon request by authorized internal and external auditors and by OLC personnel) is delineated in the SOPs.
22. Any other default accounts that are not administrator, service, or guest accounts should be disabled unless they are necessary for proper operation of the system. If these accounts must remain enabled, the passwords are changed at least once every 90 days.

Administrative Access

- Note: Administrative access means access that would allow a user to:
- Add, change, or delete user accounts and associated user provisioning for database, operating system, and network layers
 - Modify operating system, database, and application security and policy parameters
 - Add, change, or delete system exception logging information
 - Add, change, or delete permissions to data files and folders

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23. Access to administer the network, operating system, applications, and database security and system parameters is limited to IT personnel under the supervision of supervisory and/or management employees of the racino's IT department.
24. Deleted (the CMS is the control for SSG).

Backups

25. Daily backup and recovery procedures are in place and, if applicable, include:

a. Application data.

Note: This standard only applies if data files have been updated.

b. Application executable files (unless such files can be reinstalled).

c. Database contents and transaction logs.

26. Upon completion of the backup process, the backup media is immediately transferred to a location separate from the location housing the servers and data being backed up (for temporary and permanent storage). The storage location is secured to prevent unauthorized access and provides adequate protection to prevent the permanent loss of any data.

Note 1: Backup data files and programs can be maintained in a secured manner in another building on the premises that is physically separated from the building where the system's hardware and software are located. They may also be stored in the same building as the hardware/software, but not in the same immediate area, as long as they are secured in a fireproof safe or some other manner that will ensure the safety of the files and programs in the event of a fire or other disaster.

Note 2: Deleted (Keno and Bingo)

27. Backup system logs, if provided by the system, are reviewed daily by IT personnel or individuals authorized by IT personnel to ensure that backup jobs execute correctly and on schedule. The backup system logs are maintained for the most recent 30 days. The employee(s) responsible for reviewing the backup logs is delineated in the SOPs.
28. The employee responsible for the documentation indicating the procedures implemented for the backup processes and for restoring data and application files (available upon request by authorized internal and external auditors and by OLC personnel) is delineated in the SOPs.

Note: While not mandatory, licensees are encouraged to test recovery procedures at least annually.

Recordkeeping

29. A list of all gaming and gaming related systems (hardware and software) is maintained which includes the system name and version identifier (indicating period of time each version was in use), related operating system and database software and hardware (including version identification and period of time each version was in use). System documentation for all listed in-use versions of applications, databases, network hardware, and operating systems is maintained, including descriptions of both, hardware and software, operator manuals, etc.

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30. System administrators maintain a current list of all enabled generic, system, and default accounts. The employee(s) responsible for maintaining the list is delineated in the SOPs. The documentation includes, at a minimum, the following:

- a. Name of system (i.e., the application, operating system, or database).
- b. The user account login name.
- c. A description of the account's purpose.
- d. A record (or reference to a record) of the authorization for the account to remain enabled.

Note: If the operating system and/or database support more than a single gaming application, then the list should include all system, generic or default accounts enabled on that operating system or database, regardless of the system they pertain to.

31. If an IT service provider is used, the system administrator (the employee[s] delineated in the SOPs) maintains an additional list of all user accounts with system administrative permission which includes at a minimum:

- a. Name of the system administered by an IT service provider, and
- b. The user account(s) login name(s) used by an IT service provider.

32. The current lists required by MICS #30 and by MICS #31 (if an IT service provider is used) are reviewed by the racino's IT management, in addition to the system administrator, at least once every six months. The list required by MICS # 30 is reviewed to identify any unauthorized or outdated accounts. The list required by MICS #31 is reviewed to ensure that the permissions are appropriate for each user's position. The SOP is to delineate the employee(s) responsible for the review.

33. User access listings (requirements listed at MICS #13) for all gaming systems are to be retained for at least one day of each month for the most recent five years. The lists may be archived electronically if the listing is written to unalterable media (secured to preclude alteration). If available, the list of users and user access for any given system is in electronic format that can be analyzed by analytical tools (i.e., spreadsheet or database) that may be employed by OLC personnel.

Note: Deleted (entertainment applications).

34. The IT department maintains current documentation with respect to the network topology (e.g., flowchart/diagram), deployment of servers housing applications and databases, and inventory of software and hardware deployed (available upon request by authorized internal and external auditors and by OLC personnel). The employee responsible for maintaining the current documentation on the network topology is delineated in the SOPs.

Electronic Storage of Documentation

35. Documents may be scanned or directly stored to unalterable media (secured to preclude alteration) with the following conditions:

- a. The storage media must contain the exact duplicate of the original document.
- b. All documents stored must be maintained with a detailed index containing the department and date. This index must be available upon OLC request.

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- c. Upon request by OLC agents, hardware (terminal, printer, etc.) must be provided in order to perform audit procedures.
 - d. Controls must exist to ensure the accurate reproduction of records, up to and including the printing of stored documents used for audit purposes.
 - e. At least quarterly, accounting/audit personnel review a sample of the documents on the storage media to ensure the clarity and completeness of the stored documents.
36. If source documents and summary reports are stored on alterable storage media, the media may not be relied upon for the performance of any audit procedures, and the original documents and summary reports must be retained.

Creation of Wagering Instruments Database

Note: Deleted (wagering instruments and databases can only be created through an OLC approved TITO system either as a result of VLT play or cashier generated tickets).

- 37. Deleted.
- 38. Deleted.
- 39. Deleted.
- 40. Deleted.

Network Security and Data Protection

41. If guest networks are offered (such as, networks that provide internet access for patrons, hotel guests, or vendors), adequate logical segregation is provided of the guest network from the network used to serve access to gaming related applications and devices. Traffic on guest networks is non-routable to the network serving gaming related applications and devices.
42. Production networks serving gaming systems are secured from outside traffic (e.g., firewall and routers) such that systems are configured to detect and report security related events. The employee responsible for the documentation indicating the procedures for detecting and reporting security related events (available upon request by authorized internal and external auditors and by OLC personnel) is delineated in the Standard Operating Procedures (SOPs).
- Note: A suggested method in complying with this standard is to configure the system to log unauthorized logins, failed login attempts, and other security related events; and block all unused ports and any in-bound connections originating from outside the network.
43. Network shared drives containing application files and data for all gaming related software, if used, are secured such that only authorized personnel may gain access.
44. Server consoles, and unattended user terminals in gaming areas, if configurable, are configured to automatically secure themselves after a configurable period of inactivity elapses, the amount of time to be determined by management. The time period of inactivity is documented in the SOPs. Users are to supply proper login credentials to regain access to the terminal or console.

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45. Login accounts and passwords required to administer network equipment are secured such that only authorized IT personnel may gain access to these devices. The passwords for these accounts meet the security parameters of IT MICS #6, and are immediately disabled when IT personnel are terminated.
46. Documentation is maintained delineating the policies and procedures established to protect a patron's personally identifiable information, including, but not limited to:

Note 1: "Personally identifiable information" means any information about an individual maintained by a licensee including (1) any information that can be used to distinguish or trace an individual's identity, such as name, social security number, date and place of birth, mother's maiden name, or biometric records; and (2) any other information that is linked or linkable to an individual, such as medical, educational, financial, and employment information.

Note 2: The employee responsible for this documentation required by this standard is to be delineated in the SOPs. The documentation is to be made available upon request by authorized internal and external auditors and by OLC personnel.

- a. The designation and identification of one or more management officials having primary responsibility for the design, implementation and ongoing evaluation of such procedures and controls;
- b. The procedures to be used to determine the nature and scope of all personally identifiable information collected, the locations in which such information is stored, and the devices or media on which such information may be recorded for purposes of storage or transfer;
- c. The procedures to be used to prohibit access to a patron's unique personal identification number ("password");
- d. The procedures to be used to reasonably ensure only a patron will be changing its password as the holder of an account;
- e. The policies to be utilized to protect personally identifiable information from unauthorized access by employees, business partners, and persons unaffiliated with the company;
- f. Notification to a patron of privacy policies;
- g. Procedures to be used in the event the operator determines that a breach of data security has occurred, including required notification to the OLC; and
- h. Provision for compliance with all local, state and federal laws concerning privacy and security of personally identifiable information.

Remote Access

47. For each computerized gaming related application that can be accessed remotely for purposes of obtaining vendor support, the Standard Operating Procedures (SOPs) must specifically address remote access procedures including, at a minimum:
- a. Type of gaming related application, vendor's name, and version number, if applicable.
 - b. Deleted (system based game).

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- c. The method and procedures used in establishing and using passwords to allow authorized vendor personnel to access the system through remote access.
 - d. The personnel involved and procedures performed to enable the method of establishing remote access connection to the system when the vendor requires access to the system through remote access.
 - e. The personnel involved and procedures performed to ensure the method of establishing remote access connection is disabled when the remote access is not in use.
 - f. Any additional requirements relating to remote access published by the OLC.
48. In the event of remote access, prepare a complete record of the access to include:
- a. Name or identifier of the licensee's/operator's employee authorizing access;
 - b. Name of manufacturer/vendor;
 - c. Name or identifier of manufacturer's/vendor's employee accessing system;
 - d. Name of user account(s) through which the vendor's employee accessed the system;
 - e. Name of system(s) accessed by the vendor;
 - f. Adequate and detailed description of work performed (including the old and new version numbers of any software that was modified); and
 - g. Date, time, and duration of access.
49. User accounts used by vendors must remain disabled on all operating systems, databases, network devices, and applications until needed by such vendor. Subsequent to an authorized use by a vendor, the account is returned to a disabled state.
50. Remote access for all vendors is enabled only when approved by authorized IT personnel.
51. If remote access to the production network (live network) is available, and allows access to gaming related applications, such access is logged automatically by the device or software where it is established, if the system is capable of automatically logging such access. If automated logging is available, the log is to indicate the date/time of such access and the identification of the individual/user account performing access.

Note: The SOPs are to delineate whether automated logging is performed and the device or software performing this function.

Changes to Production Environment

52. Documentation is maintained delineating a comprehensive and robust change control process to prevent any unauthorized changes being incorporated into the production environment. The employee responsible for the documentation of the change control process (available upon request by authorized internal and external auditors and by OLC personnel) is delineated in the Standard Operating Procedures (SOPs). The documented process includes at a minimum:
- a. Proposed changes to the production environment are evaluated sufficiently by management personnel prior to implementation;

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- b. Proposed changes are properly and sufficiently tested prior to implementation into the production environment;
- c. A strategy of reverting back to the last implementation is used (rollback plan) if the install is unsuccessful and the rollback plan is tested prior to implementation to the production environment; and
- d. Sufficient documentation is maintained evidencing management approvals, testing procedures and results, rollback plans, and any issues/resolutions encountered during implementation.

Note: The above process includes ALL changes to the production environment (operating system, network, databases, and applications) that relate to critical IT systems, and gaming applications.

Information Technology Department

Note: If a separate IT department is maintained or if there are in-house developed systems, MICS #53 through #56 are applicable. The IT department may consist of the licensee's/operator's IT personnel or an IT service provider.

- 53. The IT department is independent of all gaming departments (e.g., cage, count rooms, etc.).
- 54. IT personnel are precluded access to wagering instruments and gaming related forms (e.g., VLT jackpot forms, , etc.).

In-House Software Development

- 55. If source code for gaming related software is developed or modified internally, a process is adopted to manage the development. The employee responsible for the documentation indicating the process in managing the development or modification of source code (available upon request by authorized internal and external auditors and by OLC personnel) is delineated in the Standard Operating Procedures (SOPs). The process must address, at a minimum:
 - a. Requests for new programs or program changes are reviewed by the IT supervisory personnel. Approvals to begin work on the program are documented.
 - b. A written plan of implementation for new and modified programs is maintained and includes, at a minimum, the date the program is to be placed into service, the nature of the change (if applicable), a description of procedures required in order to bring the new or modified program into service (conversion or input of data, installation procedures, etc.), and an indication of who is to perform all such procedures.
 - c. Sufficiently documenting software development and testing procedures.
 - d. Documentation of approvals, development, testing, results of testing, and implementation into production. Documentation includes a record of the final program or program changes, including evidence of user acceptance, date in service, programmer, and reason for changes, is documented and maintained.
 - e. Physical and logical segregation of the development and testing from the production environments.
 - f. Adequate segregation of duties (i.e., those who develop/test code do not have access to introduce new or modified code into the production environment).

Note: For MICS #55(e) and (f) a system administrator is precluded from developing/testing code which will be introduced into the production environment.

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- g. Secured repositories for maintaining code history.
 - h. End-user documentation (guides and manuals).
56. A copy of the associated change request submitted to the OLC for each new program or program change, and a record that such software was approved for use, is maintained.

Purchased Software Programs

Note: IT MICS #57 applies when IT personnel perform in-house modifications to a purchased software program.

57. New programs and program changes for purchased systems are documented as follows:
- a. Documentation is maintained and includes, at a minimum, the date the program was placed into service, the nature of the change (if applicable), a description of procedures required in order to bring the new or modified program into service (conversion or input of data, installation procedures, etc.), and an indication of who performed all such procedures.
 - b. A copy of the associated change request submitted to the OLC for each new program or program change, and a record that such software was approved for use, is maintained.
 - c. Testing of new and modified programs is performed (by the licensee or the system manufacturer) and documented prior to full implementation.

Data Access Control

Note: MICS #58 through #60 apply to any OLC approved gaming related application (including systems utilizing promotional accounts). The Standard Operating Procedures (SOPs) are to delineate the methods and procedures utilized.

58. Procedures are in place to ensure that no alteration is permitted of any system stored transaction history or event log information that was properly communicated from the game, gaming device or generated by the application.
59. Procedures are in place to ensure that all critical system stored data are non-alterable other than through normal operation processes. Critical system data includes data relating to, but not limited to, wagering instruments' validation numbers and dollar value, promotional accounts' personal identification numbers and account balances, and unpaid winning tickets information.

Note: Methods may include, but are not limited to, checksums on data tables or database encryption.

60. Procedures are in place to ensure that any communication with equipment or programs external to the approved system is performed through an OLC approved secure interface. The documentation evidencing approval is maintained and available upon request.

Note: Documentation may include, but is not limited to, detailed network topology diagrams indicating all interfaces utilized to access OLC approved systems by external programs.