**Office of Liquor and Gaming Regulation**

**QCOM 3 monitoring system requirements**

Version 1.1

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# Introduction

The Office of Liquor and Gaming Regulation (OLGR) develops communications interfaces for use with gaming machines in the State of Queensland.

Purpose

This document defines the operational requirements and policies with respect to the monitoring of QCOM 3 Gaming Machines.

For QCOM protocol Versions 1.5.5, 1.6.x and also the older I.G.T. protocol, refer to the QCOM Site Controller Procedures v1.6.x.

Applicability

This document is required reading for developers of monitoring systems for QCOM 3 EGMs.

EGM manufacturers do not require a copy of this document to implement QCOM 3.

Prerequisite knowledge

* Gaming machines all associated A/NZ requirements
* QCOM 3 Interface Specification and companion summary spreadsheet
* QCOM v1 Protocol and associated requirement documents
* A developer level understanding of QCOM enabled gaming machine monitoring systems
* All requirements’ documents referred to at:
  + <https://www.business.qld.gov.au/industries/hospitality-tourism-sport/liquor-gaming/gaming/technical-services/monitoring-systems>

## Terms and Abbreviations

For any terms and abbreviations used in the document not found below, refer to QCOM 3 Interface Specification document’s glossary.

**app**

In this document an ‘app’ refers to a QCOM 3 - QCOM user Lua set of scripts that utilises the QCOM 3 API implemented by a QCOM 3 EGM. A common example application here being the implementation of network protocol in a QCOM 3 EGM such as used in EGM monitoring systems and other EGM related services.

**IPv6**

Internet Protocol version 6 (IPv6) is the most recent version of the Internet Protocol (IP), the communications protocol that provides an identification and location system for computers on networks and routes traffic across the Internet.[[1]](#footnote-1)

**Host**

Means a ‘computer’ owned by the LMO that is utilised at least in part for the monitoring or control of gaming machines.

**LMO**

A ‘Licensed Monitoring Operator’ as per gaming machine related Queensland Legislation.

**Local Host**

In this document, refers to any gaming venue located local hosts (if any) that interfaces to the gaming machine via QCOM 3 that is not also the monitoring system central host. (This was what OLGR used to call a ‘site controller’ in the past)

Please refer to the QCOM 3 Interface Specification document for the remainder of glossary of terms and abbreviations used in this document.

**EGM Events**

As defined in the QCOM 3 Interface Specification document. However raw EGM meters logged by the EMS must also be considered as EGM events under these requirements.

**EMS**

Means an *Electronic Monitoring System*, or just *Monitoring System* for short.

**NV RTC**

Non-volatile real-time clock

## Machine ID & associations

**FAQ**: How does **logicUID** get associated with a serial number (aka **machineID**)?

Ans:

* For new machines, **logicUID** & serial number association info would be available from the machine manufacturer.
  + Alternatively, the **6 digit machine serial number** may also be on a plate on the exterior of the machine (which if present would be used for the **machineID**) and **logicUID** is displayed from within EGM audit mode.
* For existing / commissioned machines & solely via the network:
  + **machineID** is displayed for every UAA login (it’s in the connect message) and via QCOM API function qcom.idMachineID()
  + **logicUID** is available via machine audit mode, the respective QCOM API function & via all MDP broadcasts (which also gives source IP address and also the MAC address if local to the machine).

On the subject of uniquely identifying QCOM 3 gaming machine within a system.

**FYI For a QCOM 1 EGM:**

* A 6 digit machine serial number is on a plate on the exterior of the machine.
  + This number would also be available from the EGM manufacturer.
* An installer at the machine manually enters this serial number into the EGM via audit mode.
* The MID + serial number combination **uniquely identifies** a machine in a QCOM 1 system. Small risk of human error wrt serial.

**For a QCOM 3 EGM:**

Options:

* In QCOM 3, qcom\_idMfr[3]() + qcom\_idLogicUID() denotes a unique machine (wrt the machine’s processor board). The association of logicUID & machineID will need refreshing upon each processor board replacement.
* In QCOM 3, qcom\_idMfr[3]() + qcom.idMachineID() denotes a unique machine (wrt the machine’s cabinet aka serial number).

NB whenever a processor board is replaced, any machineID / logicUID association in a system will require refreshing.

**Conclusion - on the subject of uniquely identifying QCOM 3 gaming machine within a system:**

It is recommended qcom\_idMfr[3] + logicUID be used to **uniquely identify** machines in QCOM 3 related systems as it does not require any manual entry. However MID + qcom.idMachineID() may still be used in existing systems.

The EMS must be able to easily cross reference between the two possible identification methods above. CP:[[2]](#endnote-1) (OLGR may use either method to identify an EGM of interest.)

The EMS must maintain a table of current qcom.idCommissionUID() values for each EGM in the system. CP:[[3]](#endnote-2) Use case: The QMA will occasionally request this table for use in targeted QMA scripts (such as for QCOM user deletion scripts for example).

# Requirements

This document is not a set of how-to requirements, but a set of what-to-do requirements. It is up to the LMO to decide on the best approach and practises in achieving the requirements in this document.

## General

Monitoring systems must not assume that EGM meters it receives from the EGMs or another host in the EMS are always free from error and must apply sanity checks across each interface in accordance with the requirements in this document. CP:[[4]](#endnote-3)

All hosts in the monitoring system must be hardened[[5]](#footnote-2) against any type of malformed message attack on any of its communications ports. CP:[[6]](#endnote-4)

Local hosts must be able to support a minimum of **32 EGMs each** with up to minimum **32 enabled games and up to 256 resident games** (un-configured) and up to **32 variations** per game per EGM. CP:[[7]](#endnote-5)

## QCOM users

Every QCOM user has a QMA introductory script associated with it. Each script is signed by the QMA with respect to a given QMA certificate. QMA introductory scripts are used to create a QCOM user in QCOM 3 EGMs, or to actuate QMA autonomous users when need be.

The EMS must store all QMA introductory scripts for use when introducing QCOM users the EMS needs to install. CP:[[8]](#endnote-6) All QMA scripts are signed by the QMA so they are secure.

There will also be a need to store numerous QMA scripts for ad-hoc execution for things like: QCOM user deletion and updating of QMA controlled parameters.

The EMS must maintain an association of QMA script to QMA certificate to ensure the QMA scripted executed in each EGM applies the EGMs installed QMA certificate. CP:[[9]](#endnote-7)

Every QMA script has a:

* Purpose (instruction / deletion / modification / ad-hoc)
* version
* QCOM user username
* QMA required associated certificate fingerprint
* not before date and time
* not after date
* QCOM API minimum version
* [QCOM API maximum version]
* [date and time for execution]
  + scope

Every QCOM user has a:

* username
* purpose or role
* one or more QMA introductory script versions
* an app (per version per QMA cert)
  + QCOM API minimum version
  + [QCOM API maximum version]
* scope (State-wide is typical)
* Persistent (i.e., from RAM clear) / one-time
  + If one-time, there will be a scheduled ‘go’ date and time associated with it
* not before date and time
* not after date and time
* Quarantine action (critical – quarantine machine / report only)

## QCOM users and apps

The EMS must have the ability to find new QCOM 3 machines on the QCOM 3 LAN via the QCOM 3 Machine discovery Protocol (MDP), configure and enable these machines in accordance with these requirements and OLGR provided datafiles. CP:[[10]](#endnote-8)

The EMS must install and start at least one QCOM user with an EGM monitoring protocol app for monitoring purposes that meets all the requirements in this document. CP:[[11]](#endnote-9) QCOM 3 machines using the qcom16 app may be used for a transitional period. However, as the qcom16 app will not cater for all QCOM 3 new features (e.g., more diverse progressive game types, content auditing, downloadable support), ultimately, a supplementary or a new EGM-to-EMS protocol app of the LMO’s own design or choosing that meets all the requirements in this document must be utilised[[12]](#footnote-3). CP:[[13]](#endnote-10) An easy approach here is to use a simple remote procedure call protocol app and a credit redemption app. Demo apps are provided with the QCOM 3 SDK.

The EMS in addition to its own apps, must have ability to install and upgrade an arbitrary number of QCOM 3 user apps approved by the regulator. CP:[[14]](#endnote-11)

The EMS must cater for[[15]](#footnote-4) a default set of apps (State-wide) and allow for special scheduled one-time QMA scripts and apps on a per machine or per venue basis. CP:[[16]](#endnote-12)

QCOM 3 user apps may be updated periodically, the EMS must facilitate the rollout of updated apps to all EGMs at a scheduled time and be completed within a few hours (assuming no communication outages). CP:[[17]](#endnote-13)

The EMS must permit apps installed by third parties. CP:[[18]](#endnote-14) The EMS must be able to collate and report on installed apps it finds in gaming machines. CP:[[19]](#endnote-15) (EGM UID, app, app hash, timestamp, IsShutdown(), IsQuarantined() state).

### App design

LMOs should refer to the QCOM 3 Summary Spreadsheet – QCOM API sheet, for a list of QCOM API functions that they will be granted privilege to.

In relation to QCOM app design, app developers may assume EGM state transitions will occur as defined by the QCOM 3 Interface Specification and that an EGM will go into a fatal error if this does not occur as this is a QCOM 3 core requirement and applied by the QCOM 3 scripting engine.

Monitoring systems may trust that the QCOM 3 User environments available to them cannot be altered so as long as they keep their respective QCOM 3 User login credentials secure.

Monitoring systems may assume the Lua Interpreter in use by the EGM’s QCOM scripting engine is issue free.

LMO must not assume that they have exclusive access to any of the QCOM API functions that support multiple QCOM users.[[20]](#footnote-5) (This requirement is not indicative of any future changes to regulatory operating environment for gaming machines in QLD; it’s just good practice and will make the EMS more portable to other jurisdictions.)

### UAA certificates

For LMO provided apps the EMS must maintain a UAA certificate and private key for maintenance and support of the app. Refer to the QCOM 3 specification document for more information.

UAA private keys must be kept secure. CP:[[21]](#endnote-16)

### Supporting servers and services

A QCOM 3 EMS will need the following services on-line whose IP is directly visible to QCOM 3 EGMs: CP:[[22]](#endnote-17)

* File server/s (either ftp or http) for
  + QMA scripts
  + QCOM apps
  + machine software upgrade file packages
  + Peripheral firmware upgrade files (bna, tp, ca)
* NTP server (if not maintaining time by another means, for example, directly via a QCOM user)
* A service than can find QCOM 3 machines via MDP and act accordingly:
  + Run one or more QCOM introductory scripts
  + This service must monitor and record MDP broadcast data in a database (State-wide)
* For EMS provided QCOM users and associated apps:
  + A service that can log into an EGM’s UAA service for a QCOM user and install the latest associated QCOM3 app. Typically: once-per-RAM clear of EGM and update of app

## QCOM 3 Interface specification updates

With adequate notice and industry consultation, OLGR may increase the scope of QCOM 3 over time. OLGR will attempt to make new enhancements (by adding additional APIs) such that properly programmed existing EGMs and monitoring system should inherently ignore any new information until such time as they are programmed to handle it, without any side effects.

It is the QCOM users responsibility to interact to the EGM via the correct interface version the EGM reports. The EGM reports its interface version in the QCOM 3 API function *idInterfaceVersion()*.

## The QCOM 3 Operating Environment

In the state of QLD, the QCOM 3 operating environment will be the same the existing QCOM v1 operating environment. That is, QLD LMOs will remain the sole provider of all gaming related services except those services previously made available to third parties under QCOM v1. For example, third party Jackpot ‘sniffing’ displays will still be able to operate as they did before, as will third party player loyalty systems. (However existing systems will need an upgrade to be able to listen over Ethernet.) Installers of all regulated gaming equipment will be performed as they are now under QCOM 1.

### Authorities

### QMA

The QMA for monitoring systems monitoring and controlling gaming machines operating in Queensland Clubs and Hotels and Casinos is the OLGR.

The EMS must have an access-controlled interface that allows QMA certificates to be installed and updated in the EMS by authorised personnel only. CP:[[23]](#endnote-18) All changes here must be logged by the EMS.

The OLGR will release a new QMA certificate once every few years. QCOM 3 machines with old certificates may continue to operate while the certificate resides in the EMS secure QMA cert store. CP:[[24]](#endnote-19) If an EGM is RAM cleared then the latest QMA certificate must be installed by the EMS in the EGM. CP:[[25]](#endnote-20)

It must not be possible to add or change the QMA certificates installed in the EMS other than via the above interface by authorised personnel. CP:[[26]](#endnote-21)

The EMS must be coded to utilise only the QMA certificates installed via the above interface. CP:[[27]](#endnote-22) It must not be possible to circumvent this without altering approved EMS software. CP:[[28]](#endnote-23)

The EMS must support the fact that new QMA certificates may be installed over time and continue to allow old QMA certificates until such time as they are no longer installed in any EGM or are specifically revoked. CP:[[29]](#endnote-24)

The EMS must ensure that every QCOM 3 machine without a QMA certificate has the latest QMA certificate installed by the EMS without delay. The EMS must check each EGM’s QMA is set correctly upon each new connection. CP:[[30]](#endnote-25)

The EMS must ensure that all QMA certs in QCOM 3 machines are from its secure store of QMA certificates. Any detected QCOM 3 machines with unrecognised QMA certificates must be logged in the EMS as an event (s2.35.1.20) which it must also escalate for human action for investigation. CP:[[31]](#endnote-26)

Related: section 2.15

The EMS must be able to automatically queue up and execute State-wide any regulator provided QMA scripts within **3** business days of the receipt of the request and script. CP:[[32]](#endnote-27)

The EMS must accommodate execution of these scripts to occur at a specific time of day. CP:[[33]](#endnote-28)

Scripts will vary widely in nature, examples of a QMA script might be to update a public key, delete a QCOM user, upgrade a QCOM user, or to update parameters that remain in QMA control in a given jurisdiction.

### SAA

The SAA for monitoring systems monitoring and controlling gaming machines operating in Queensland Clubs and Hotels is the OLGR.

The QMA will install the SAA in gaming machines monitored by LMOs as a built-in function of all QMA introductory scripts.

LMO provided QCOM User scripts are a part of the EMS and must be approved and signed by the OLGR.

Nothing for the EMS to do here with respect to SAA certificates.

### SUA

SUA certificates relate to machine software upgrades which is mandatory for EMS to support.

The SUA for monitoring systems, monitoring and controlling gaming machines operating in Queensland Clubs and Hotels is the OLGR.

The QMA will install the SUA in gaming machines monitored by LMOs as a built-in function of all QMA introductory scripts.

Machine software upgrade packages (which are SUA signed) have a required set of SUA certificates which will change every few years. Every set of SUA certificates can be linked to a QMA introductory script not before date. CP:[[34]](#endnote-29)

All machine software upgrade packages are linked to a specific set of SUA certificates. OLGR will ensure that the LMO is provided with this information with each approved machine software upgrade package.

### QMA installed autonomous QCOM users

In Queensland Clubs and Hotels the QMA (via “introductory scripts”) may install a small number of autonomous QCOM users that facilitate existing third party services currently in operation in Queensland Clubs and Hotels that formerly used to “sniff” the QCOM v1.6 protocol. Such as:

* Gaming Venue Management Systems,
* Jackpot Display Systems

In Queensland Clubs and Hotels, the intent is to mimic (operationally wise), the same environment that is currently in operation with QCOM v1.6 EGMs.

The EMS must not panic when it sees unexpected QCOM users (via MDP or via an app). CP:[[35]](#endnote-30) The EMS must keep a record of all seen QCOM users and script hashes thereof. CP:[[36]](#endnote-31)

### Upgrade support

EMS based remote upgrade support is mandatory for:

* QCOM 3 machine upgrades CP:[[37]](#endnote-32)
* Peripheral firmware upgrades (bna, tp, ca devices) CP:[[38]](#endnote-33)
* QCOM user app/script installation and upgrades thereof CP:[[39]](#endnote-34)

Upgrades (excludes downloading) must be scheduled CP:[[40]](#endnote-35) to occur outside of gaming hours (or off peak if gaming hours are 24/7).

The machine must be disabled during the upgrade process (excludes downloading). CP:[[41]](#endnote-36)

In production systems hash verification arguments must be supplied with all download commands and API functions where QCOM 3 provides for one. CP:[[42]](#endnote-37)

QCOM 3 machine upgrade local storage. EMS local hosts may need local storage for temporary files concerning machine upgrades. The minimum amount of storage is **yet to be set exactly**, however expect it to be in the order of **~100GB** but also proportional to venue size (number of EGMs). CP:[[43]](#endnote-38) This storage area does not have to be fault tolerant, or raided or similar.

Machine upgrade package, WAN download rate. The WAN download rate must be at least **2KB** per second on average. CP:[[44]](#endnote-39)

It is expected that QCOM user script download rates be a high priority and must complete within a few seconds. The WAN download rate must be at least **50KB** per second on average. CP:[[45]](#endnote-40)

As for peripheral firmware upgrade packages (which shouldn’t be very large), the WAN download rate must be at least **50KB** per second on average. CP:[[46]](#endnote-41)

### QCOM User Quarantine Events

The EMS must detect and report all QCOM user quarantine events to the OLGR ASAP after each occurrence with full details of the event. CP:[[47]](#endnote-42) Include the script’s hash and machine commissioning ID in this information. CP:[[48]](#endnote-43) In QLD, the only way to rectify a quarantined user is an OLGR signed QMA script which typically only work once.

The EMS must not auto reset quarantined users, the event must be escalated for manual rectification and reported to OLGR. CP:[[49]](#endnote-44)

The EMS must immediately disable an EGM that quarantines a QCOM user whose role is in relation to EGM basic monitoring or other critical service. CP:[[50]](#endnote-45) (This requirement may be removed in the long term if deemed unnecessary with respect to likelihood or risk. See below.)

QCOM user quarantine in users performing critical roles are expected to be rare as they are typically due to a software issue somewhere. They are an easily preventable occurrence and won’t be tolerated by the OLGR.

### QCOM v1.6 EGMs

In Queensland Clubs and Hotels QCOM v1.6 EGM monitoring must continue as per existing QCOM v1 requirements. CP:[[51]](#endnote-46) The QCOM v1.x fibre optic LAN must continue to operate as needed.

As per the transition from QCOM v1.5 to v1.6, QCOM 3 machines will trickle into the market slowly over time e.g. with respect to the QCOM v1.5 to v1.6 transition, it took approximately 9 years to get to the 50% mark.

Once QCOM v1.x EGMs approach a being considered a minority (or sooner if desired), additional discussions will take place around their demise. It should be noted that the QCOM v1.6.7 update introduces an “8-bit mode” to the specification. This will help at the end stages of the migration of all EGMs to an Ethernet based EGM LAN.

It is likely that QCOM 3 EGMs running the qcom16 app will be in the QLD market before mid 2023. OLGR previously advised in 2018, a mandate for QCOM v1 local hosts (site controllers) to support an alternative set of QCOM v1 response timeout values for specific machines (aka QCOM 3 EGM running theqcom16 app). The timeouts proposed are summarised below. CP:[[52]](#endnote-47)

* Response timeout (QCOM v1 SCP section 4.5.3):
  + **50 milliseconds** (there is some probability after testing QCOM 3 machines has occurred that this will be lowered to as low as 10msec)
* Inter-character timeout (QCOM v1 SCP section 4.5.4):
  + 3 milliseconds (Up to 6 msec is also acceptable)
* Pause after broadcasts (QCOM v1 SCP section 4.5.5):
  + **10 milliseconds** (there is some probability after testing QCOM 3 machines has occurred that this will be lowered back to the original qcom v1.6 requirement value)
* Poll Wait (QCOM v1 SCP section 4.5.8) para 1:
  + **4 character times** (@ 19200kbaud and 11 bits per character)
* Poll Wait (QCOM v1 SCP section 4.5.8) para 2:
  + 30 milliseconds or 50 character times (@ 19200kbaud and 11 bits per character)

The two values in bold above show the proposed values and won’t be finalised until OLGR has tested at least three QCOM 3 brands of EGMs. There is still the possibility that QCOM 3 machines running the qcom16 app won’t need and special timings at all.

## The Gaming Venue EGM LAN

The intent is gaming venues should only require one physical gaming machine based LAN. Please contact the OLGR if you have installed any Ethernet gaming machine based LAN at venues which in your opinion cannot also easily accommodate QCOM 3 machines according to QCOM 3 requirements.

The monitoring system must check the LAN responsiveness of EGMs that it monitors at least **once every 10 seconds.** CP:[[53]](#endnote-48) Log events. CP:[[54]](#endnote-49)

### EGM LAN Configuration

It is confirmed that new QCOM 3 EGMs will be required to support both IPv4 and Ipv6. However, it is not known at this time (May 2016) if there will be existing QCOM v1.x EGMs that will upgraded to QCOM 3 and out of those how many won’t also be able to support Ipv6.

OLGR is calling for submissions from all QLD LMO’s as to their preferred QCOM 3 LAN configurations. Submission must take into account the following:

* Minimise installation and operating costs for the gaming venue & LMO.
* The intent is to have one gaming machine LAN per gaming venue.
* QCOM 3 currently states: *“In the Queensland Clubs and Hotel market, licensed gaming venues must own their gaming machine LAN infrastructure, such as cabling, switches and router hardware. This QCOM 3 LAN infrastructure must be off-the-shelf, widely commercially available hardware.*”
* QCOM 3 machines at each gaming venue must be able to communicate with each other in order to support new game features (e.g. animation synchronisation).
* Does not make existing gaming machines obsolete before their time. See next point below.
* Permit existing machines to be upgraded to QCOM 3 where they are capable. Most QLD machines have had Ethernet ports for some time (a long standing QCOM v1 requirement). Out of these machines it is not known as to how many can be upgraded to QCOM 3, or how many can support (or be upgraded to support) Ipv6. While OLGR will require that new QCOM 3 machines must support Ipv6, the transition to Ipv6 must be at minimal cost to gaming venues and LMOs.
* The LAN must be freely accessible to the gaming venues for any existing third party gaming related systems (e.g. gaming venue management / loyalty systems). Once they have access to the LAN, whether they are granted access as a read only QCOM user, or will feed off a QMA installed autonomous user[[55]](#footnote-6) is TBA.

Submissions should also cover:

* IP address configuration and control.
* Configuration, types and costs of expected QCOM 3 LAN switches / routers etc.

### Protocols

The EGM- to-EMS protocols used are at the discretion of the LMO but must be approved and fit for purpose.

Other Protocols and Services

As mentioned, it is possible that the LMO will be sharing the gaming machine LAN with any existing gaming machine related service providers currently in operation Queensland Clubs and Hotels.

For more information refer to QCOM 3’s section on LAN requirements.

### Encryption

QCOM 3 related EGM network protocols must be encrypted CP:[[56]](#endnote-50), however the following exceptions are permitted:

* Message Authentication Codes[[57]](#footnote-7) may be proposed as an alternative to encryption when the data in question does not have to be kept secret. This is useful for broadcasts such as those used in LP support.
* Where the data being transferred does not have to be kept secret nor does it require authentication in that if the data was forged it would have no significant impact to the integrity or security of gaming.
* NTP traffic.

### Other Services

The LMO may operate other gaming related services on the EGM LAN with the approval of the gaming venue and the OLGR. Other service communications must be quota limited by LAN switches and routers. The OLGR must approve EGM LAN quality of service settings.

Value added services such as LAN quality of service and intrusion monitoring may be implemented and offered at the LMO’s discretion.

## Off-line Operation

If a gaming venue local host is utilised for monitoring, it must allow gaming to continue when disconnected from the central EMS host for as long as: CP:[[58]](#endnote-51)

* its event queues (including EGM raw meter set events) are not full,
* it can maintain the minimum percentage return to player (i.e. w.r.t. WAN jackpots) and
* it can still open and close the gaming venue at the correct licensed gaming hours.
* it is not RAM cleared. Related: Section 2.15 also prevents individual EGMs that are RAM-cleared during the off-line period from being brought back into play.

Local hosts must have sufficient NV-RAM to ensure that their event log never becomes full during normal operation. It is expected that local hosts must be able to operate for at least **72 hours** in off-line mode before running out of memory (assuming the gaming venue’s EGMs are otherwise operating normally). CP:[[59]](#endnote-52)

If a local host in off-line mode detects it has **low** NV-RAM, the local host must automatically disable gaming and log an “event log full” event (section 2.35.2.7). Gaming must be disabled before NVRAM is so low that any intervening or consequential events/data before/during the disablement are not lost (including, for example, post disablement activity such as cashing out) and that no abnormal behaviour of the monitoring system due to memory exhaustion occurs. Related event: s2.35.2.7. CP:[[60]](#endnote-53)

## Host Fault Tolerance and Data Integrity

Hosts in a monitoring system must implement integrity checks on its internal event queue/s and any meter data it stores. CP:[[61]](#endnote-54)

Hosts in a monitoring system must verify persistent storage integrity at upon every restart. CP:[[62]](#endnote-55)

Upon a non-recoverable error in a host in a monitoring system: CP:[[63]](#endnote-56)

* Any gaming and associated services under that host must disable.
* The host must not record any new data.
* The host communications may continue for diagnostic purposes only. However a host must not transmit meters or event data as valid if in a RAM error, unless those meters or events are able to be individually verified as still being okay.

EGM events (including logged EGM meter sets) must be always stored in at least two EMS hosts at all times until they are successfully stored in the EMS central host. The EGM may be counted as a host for the purpose of this requirement. CP:[[64]](#endnote-57)

There must be no sequence of invalid or corrupt data received from an EGM that could adversely affect any part of the EMS’s integrity. CP:[[65]](#endnote-58)

The EMS must perform sanity checks on all data it uses to make decisions or calculations. CP:[[66]](#endnote-59)

## Timekeeping

The current date and time must be maintained by the EMS both accurately and **securely** throughout the EMS and EGMs. CP:[[67]](#endnote-60)

Time accuracy must be maintained to within **500 milliseconds** or better with respect to Coordinated Universal Time (UTC) at all times. CP:[[68]](#endnote-61)

In regard to security, OLGR will accept a reliable approach based on any of the following: CP:[[69]](#endnote-62)

* Access control and encryption techniques.
* A distributed / multiple time host based system (best-of-x-hosts with some consideration to the separation of time hosts with respect to control / trust.)
* A system that ensures significant changes in time are impossible to hide and would automatically trigger an investigation / sign-off by a number of separate individuals.

All hosts in the EMS must attempt to contact at least one “upstream” time server/host at least once a day or after any restart. CP:[[70]](#endnote-63)

After any period of being disconnected from the system host’s central timer server, hosts in the EMS must log an event (section 2.35.2.4) if the time difference with respect to the central time server was greater than **5 seconds**. CP:[[71]](#endnote-64)

The EMS must keep the EGMs set to the gaming venue’s **local time**. EGM time must be checked by the EMS once every EGM restart and once a day. CP:[[72]](#endnote-65)

QCOM 3 EGMs support NTP. However, NTP use with QCOM 3 EGMs is not mandatory if for example, qcom v1 is still being emulated by the QCOM 3 machine, or other EGM-to-SC protocol is being used that supports EGM time synchronisation via the QCOM API to the required accuracy above.

NTP vs QCOM API.

* NTP has no security, whereas using the QCOM API would be more secure due to the requirement for encryption.
* NTP is more accurate vs the QCOM API, however the required accuracy permits it.

### EMS Host NV-RTC Sanity Check on Power Up

All hosts in a monitoring system must perform a mandatory sanity check on their NV-RTC against a copy stored in persistent storage as early as possible upon power up. Any issues and the host must log an event (section 2.35.2.4) and contact the EMS central time server for an update before enabling other hosts or gaming. CP:[[73]](#endnote-66)

### Clock Display

The EMS must keep the clock display ON (1) by utilising QCOM 3 API function *timeSetOSD()*. CP:[[74]](#endnote-67)

## EGM Processor Door Access

Upon detection of any processor door accessed event from an EGM, the monitoring system must disable the EGM until the access has been acknowledged by an authorised person. The authorised person must be in the employ of the LMO. CP:[[75]](#endnote-68)

## Local Host RAM Reset Recovery Policies

A local host must not enable an EGM until after it has been completely initialised by the local/remote host with valid configuration data. CP:[[76]](#endnote-69)

Related OLGR datafiles.

## Local Host Power up

If a local host has been powered off for more than **24 hours**, the local host may not interact with EGMs until after it has checked in with the EMS central host. CP:[[77]](#endnote-70)

Automatic process / state recovery is required from all EMS local hosts. CP:[[78]](#endnote-71)

## EGM Not Responding

Local host must check the EGM is responding at least once every second. CP:[[79]](#endnote-72)

If the EGM does not respond to the peer EMS host for **10 seconds** then the EGM must be declared as not responding and must be disabled via the QCOM 3 Play Enabled Flag (PEF). CP:[[80]](#endnote-73) An event must be logged s2.35.1.1. CP:[[81]](#endnote-74)

## EGM Resumed Responding

“Resumed responding” is with respect to the EGM resuming communications with a peer EMS host monitoring system / local host.

1. Before allowing play on an EGM, a host in the EMS must: CP:[[82]](#endnote-75)

* Check important EGM configuration is still correct as applicable. (Related events s2.35.1.16 & s2.35.1.17)
* Ensure the QMA certificate in the EGM is one of the certificates installed in the EMS by the QMA. Otherwise the most recently issued QMA certificate must be installed by the EMS.
* Perform an EGM Content Audit if required (refer 2.32).\*
* Receive the EGM’s latest EGM meters and outstanding events.

1. If any result from above is found to be incorrect or times-out, the monitoring system must keep the EGM play disabled and log appropriate events (refer s2.35.1), until ordered to try again by either the remote host system computer or if the EGM stops/resumes responding. CP:[[83]](#endnote-76)

\*The host must only permanently record information from an EGM once EGM Content Auditing data has been successfully validated by the EMS. CP:[[84]](#endnote-77)

The monitoring system must not request EGM meters during the period after an EGM resumes responding to an EMS host after a non-responsive period, until a successful EGM content audit has been successfully completed. CP:[[85]](#endnote-78)

## EGM Factory Reset

Upon detection of an EGM RAM clear, the monitoring system must immediately save / log a copy (section 2.35.1.3) of all last known raw meters for the EGM. CP:[[86]](#endnote-79)

At EGM RAM clear (factory reset) the EMS must install the latest QMA certificate in the gaming machine (see section 2.5.1.1) and then execute their OLGR supplied “introductory script/s” in order to initially create any QCOM users the EMS requires to operate. CP:[[87]](#endnote-80)

The monitoring system must always supply a hash argument with respect to the use of qmaloadcert, qmaexecscript and userloadscripts QCI functions and qcom\_userLoadScripts() QCOM API function. CP:[[88]](#endnote-81)

The monitoring system must not enable an EGM after an EGM RAM clear until the last known meters and all events to date for the EGM are stored in the monitoring system central host. CP:[[89]](#endnote-82)

If the RAM cleared EGM had one or more SAP games and there have been no changes to the EGM’s configuration after an EGM RAM clear, then the EMS must automatically restore the last known SAP current contribution amounts for each applicable game. CP:[[90]](#endnote-83) The EMS must also have the ability to override this feature and restore alternative values as desired by the LMO. CP:[[91]](#endnote-84) (S*ometimes amounts are carried over from other EGMs.)*

If the EMS cannot restore SAPs for any reason (different game; EGM is decommissioned) then the EMS must log the ‘SAP Contribution Discarded’ event (section 2.35.1.14) for each SAP level with all the level’s property data. CP:[[92]](#endnote-85)

## EGM Configuration

Serial numbers

The EMS must set the EGM’s serial number via the QCOM API function idSetMachineID().CP:[[93]](#endnote-86) In QCOM v1 EGM serial numbers were limited to **6 digit** serial numbers with the EGM MID (2 digits) pre-pended to the front to give a UID across all EGM manufacturers. The EMS must now use the machine’s QCOM **3** API function ‘idMfr3()’ return values (a 3 character string) in place of QCOM v1 MID numbers to ensure a UID across all EGM manufacturers and add also support to the EMS for future idMachineID() values that are comprised of all printable ascii characters and up to **16 bytes** in length. CP:[[94]](#endnote-87)

The EMS must keep a history (event history (s2.35.3.1) + a database table denoting the current state[[95]](#footnote-8)) of all MID + serial numbers + logicUID associations. Include location. CP:[[96]](#endnote-88) Related s1.2.

If a QCOM 3 EGM successfully passes a content audit (as per section 2.32) then the EMS may trust all hard-coded data[[97]](#footnote-9) provided to it by the EGM. CP:[[98]](#endnote-89) In other words; other than the content audit, an EMS is not required to meticulously cross-check individual hard-coded configuration data items in an EGM with information for example that OLGR provides. CP:[[99]](#endnote-90)

The same rule as above may also be applied to QCOM v1.x EGMs in a QCOM 3 enabled EMS. CP:[[100]](#endnote-91)

The EMS must always apply sanity checks to all data received from the EGM that could adversely affect the integrity of the EMS. CP:[[101]](#endnote-92)

## EGM Game Configuration

The EMS must only enable games and game variations that have been approved for the jurisdiction in which the machine resides. CP:[[102]](#endnote-93)

Denomination Hot-Switching.

Prior to any denomination hot-switch occurring during venue operating hours, a text message\* must be displayed on the EGM by the SC for at least **1** minute before the switch; then after the switch successfully occurs, the message must be replaced and another displayed until the next play commences. CP:[[103]](#endnote-94)

\*SPAM A in the prominent position must be used for this and the message text to be used is listed in section 2.26. CP:[[104]](#endnote-95)

The intent of the requirements above is to minimise the possibility of player confusion across a denomination switch. This requirement is not mandatory if the EGM’s game/s are changed at the same time as the EGM’s denomination is changed.

The setting of game **bet option** support is mandatory. CP:[[105]](#endnote-96)

### Changing EGM Game Configuration

The OLGR has placed restrictions on how frequently and under what conditions an operator may change an EGM game’s variation (including the games’ progressive component if any). Refer to the Queensland *Gaming Machine Act 1991* and the Gaming Machine Regulation 2002 for more information. CP:[[106]](#endnote-97)

Before the OLGR will allow hot switching of a game’s variation, the monitoring system must first be capable of individually tracking all of the game’s variations multi-game/variation meters. CP:[[107]](#endnote-98)

Note that an EGM will not allow its variation to be changed if it doesn’t support hot-switching or if its credit meter is not zero or a play is in progress. The EGM should also be disabled during the switch and also note that an EGM won’t perform the change if it was not in idle mode at the time. Game variation changes must not occur while there is a player in attendance (e.g. perform them outside licensed gaming hours). Also ensure the host has received the last multi-game/variation meters before instigating the switch. CP:[[108]](#endnote-99)

Game variation change must not be performed while there may be a player in attendance. CP:[[109]](#endnote-100)

## EGM Parameters

The EMS must set and apply the EGM’s parameters as stipulated below. They must be set once per EGM RAM clear or whenever any of the defined parameters are changed in the EMS. CP:[[110]](#endnote-101)

For QLD Clubs and Hotels these parameters can be accessed as: CP:[[111]](#endnote-102)

|  |  |  |
| --- | --- | --- |
| **Parameter** | **Value** | **Scope in EMS**[[112]](#footnote-10) |
| Reserve Feature | Disabled | One per EGM |
| Autoplay Flag | Disabled (make hard-coded) | One per EGM |
| Credit Input Disable  (as per *CRLIMIT in QCOM v1.6*) | $100.00  *Must be applied via the QCOM API function egmCreditInputDisable() & egmSPAMC()* | One per EGM |
| Large Win Lockup Limit (as per QCOM v1.6 LWIN) | Set at the discretion of the LMO (suggest $10,000 or $10,001) | One per EGM |
| Maximum number of double-ups (*DUMAX as per QCOM v1.6*) | 5 | One per EGM |
| Double Up (Gamble) Limit (*DULIMIT as per QCOM v1.6*) | $10,000 | One per EGM |
| PWRTIME *(QPv1.6)* | Make 15 minutes the system default but may be changed at the gaming venues discretion | At least one per Venue |

## External Jackpot Information (EXTJIP)

The monitoring system/host must automatically keep applicable EGMs up to date via this message with details of any external[[113]](#footnote-11) jackpot systems they are participating in. CP:[[114]](#endnote-103) This typically includes jackpot name and associated current amounts. If a jackpot prize is designed to be hidden, then just send jackpot name information. Displayed prize amounts must be kept up to date at least **once per minute** (if there has been a change), or **ASAP** after any backward movement of a (non-hidden) prize amount. CP:[[115]](#endnote-104) This information must also be refreshed on the EGM whenever an EGM resumes responding and before any new play is permitted on the EGM. CP:[[116]](#endnote-105)

If the EMS elects to trigger external jackpots in the EGM via a QCOM user, then a QCOM user must be dedicated to that role and must not perform any other functionality. CP:[[117]](#endnote-106)

Related:

* The required QCOM 3 API function to use here is *qcom\_egmSMS().*CP:[[118]](#endnote-107)
* OLGR Jackpot System Minimum Technical Requirements document.

## Progressive Jackpots

QCOM Local Area Linked Progressive jackpot support is mandatory. CP:[[119]](#endnote-108)

All existing types of EGM linked jackpot systems must continue to be supported by QLD LMOs. CP:[[120]](#endnote-109)The following new types of progressive jackpot must now also be supported under QCOM 3:

* LP including a percentage increment of the next start-up / reset value. CP:[[121]](#endnote-110)
* In QCOM 3 games there are no longer any constraints as to what levels may be linked between games. This must be supported by the EMS[[122]](#footnote-12). CP:[[123]](#endnote-111)
* EMS support required for QCOM 3 progressive level mode change (SAP <- - -> LP) where a game offers it. CP:[[124]](#endnote-112)

The OLGR document entitled “Jackpot Systems Minimum Technical Requirements” (JSMTR) also applies to QCOM LP and should be consulted. Many requirements from the former QCOM v1.6 operating procedures have not been brought forward because they are already covered by the JSMTR document.

### General

For Link Progressive jackpots where the LP component is a part of the minimum theoretical percentage return to player, the EMS must always ensure the LP percentage component is always returned to the player in full (including all overflows). This means if the jackpot system totaliser is off-line that the EGMs on the jackpot must also be disabled. CP:[[125]](#endnote-113)

No jackpot contributions may ever be lost. (meters lost or final decommissioning events not logged) CP:[[126]](#endnote-114)

Monitoring systems must be able to support at a minimum, **8** LP levels per EGM – preferably unlimited (this is up from **one** overall LP group in QCOM v1.6), with up to **eight** levels per game. CP:[[127]](#endnote-115)

The ability to run QCOM LPs across multiple local hosts or across multiple venues is **not mandatory**.

There must be no limit on the number of EGMs per group except that which is the normal EGM limit for an EMS local host. CP:[[128]](#endnote-116)

The EMS must support multiple LP jackpot triggers per play from an EGM game. CP:[[129]](#endnote-117) However unlike QCOM v1.6 EGMs which would send jackpot hit event to the system one at time and no sooner than the last LP event lockup was acknowledged / cleared; **for QCOM 3 EGM games, the EMS must support multiple simultaneous hits of jackpots (of different levels) where the hit events are generated all at once within a single LP lockup**. CP:[[130]](#endnote-118)

The EMS must ensure that before any QCOM LP EGMs are enabled for play, all progressive game variations, groups ID’s & levels for the EGM are correctly & fully setup and that the jackpot system totaliser is on-line. CP:[[131]](#endnote-119)

QCOM LPs must be only configurable in the EMS host system computer by authorised personnel and from OLGR approved LP variations as listed in OLGR datafiles. CP:[[132]](#endnote-120)

The EMS must not allow any progressive levels of a group to be deleted for which any EGM under it is contributing to. All participating EGMs must first be either removed or moved to a new progressive group. CP:[[133]](#endnote-121)

Upon deleting a QCOM LP jackpot the current jackpot contribution the current liability / amount owing must not be discarded. CP:[[134]](#endnote-122) The current contribution must be added to another LP or SAP jackpot in the first instance, or where this is not possible then refer to the Jackpot Systems Minimum Technical Requirements for additional options and further information. CP:[[135]](#endnote-123)

All progressive meters and associated calculations must be at least **64 bits** or larger. CP:[[136]](#endnote-124)

QCOM LP jackpot systems must be able to handle jackpots with percentage increments from zero to 100% to at least **four** decimal places. CP:[[137]](#endnote-125) (NB this is as per QCOM v1.6. Also, OLGR systems don’t support greater than four decimal places.)

QCOM LP jackpot systems must be able to handle a jackpot with percentage increments of zero (beware of divide by zero problems especially when a hit occurs) i.e. a fixed prize. CP:[[138]](#endnote-126)

There must be no loss or gain of money during the totalisation process at any time. Be sure to check not just totalisation, but the process of resetting of a jackpot value after a win. CP:[[139]](#endnote-127)

Jackpot prize adjustments must be possible to the same policy based requirements under QCOM v1.6 jackpot support. CP:[[140]](#endnote-128) For more information refer to the OLGR QCOM v1 Site Controller Procedures document. However, under QCOM 3, multiple jackpot prize adjustments without EGM RAM clear are now possible and this must now be supported by the EMS. CP:[[141]](#endnote-129)

### Configuration

All progressive configurations used in the EMS must be approved by the OLGR. CP:[[142]](#endnote-130) Refer OLGR datafiles. A progressive configuration change is allowed under the same rules as per a variation change (refer 2.17.1). CP:[[143]](#endnote-131)

Systems should make no assumptions about jackpot parameters (such as formulas) other than: CP:[[144]](#endnote-132)

* each jackpot level will have an arbitrary number of jackpot level parameters (which may change in number from level to level or game to game) and
* that there will be a unique identifier and compatibility information parameters.

Systems must not assume that: CP:[[145]](#endnote-133)

* A jackpot level TRTP is a constant value.
* That it will be possible to calculate a levels RTP without additional information (i.e., a specific formula) from the game designer.

### Linked Progressive Current Amounts and Broadcasts.

LP broadcast frequency

The monitoring system/host must automatically keep applicable EGMs up to with current amounts of any linked jackpot systems their games are participating in. The frequency must be:

* at least **once per minute** while the EGM is on-line. CP:[[146]](#endnote-134)
* ASAP after any backward movement of any applicable prize amount (e.g., a prize hit[[147]](#footnote-13)). CP:[[148]](#endnote-135)
* whenever an EGM resumes responding and before any new play is permitted on the EGM. Refer QCOM API function *lpPrizeSet()*.CP:[[149]](#endnote-136)

LP broadcast timeout.

The EMS must ensure that if any LP prize in the EGM has not received an update within the above stated time frame, that EGM play is disabled until an update has been received. (This requirement can only be achieved by a QCOM user.) CP:[[150]](#endnote-137)

Progressive group ID (pgid) values

The monitoring system/host must assign *pgid* fields to all LP levels in EGM games such that the *pgid* value identifies to all parties which jackpots prizes are linked across the entire EMS with no other information required. CP:[[151]](#endnote-138)

Related: Section 2.6.3 Encryption

For other LP requirements, refer to the OLGR Jackpot System Minimum Technical Requirements documents. CP:[[152]](#endnote-139)

### Sharing of QCOM Linked Progressive Jackpots

*These requirements are as per QCOM v1.6 operating requirements. The requirements still promote pay-all in full, over sharing jackpot simultaneous wins.*

Simultaneous jackpot wins are possible with QCOM LP jackpots.

In QCOM LP, a simultaneous win is said to have occurred, when on one EGM, a jackpot occurs and then on one or more other EGMs, another jackpot for the same level occurs before the current jackpot amounts displayed on those other EGMs could be reset. A simultaneous win is detected in

QCOM when a LP Award event’s amount is greater than the current jackpot amount for the level.

Sharing a simultaneously won jackpot is an option under QLD legislation as opposed to paying all simultaneous winners in full. However, it is OLGR policy for Jackpot levels which are paid by ECT for all simultaneously won jackpot amounts to be paid in full. CP:[[153]](#endnote-140)

The jackpot system must detect all occurrences of simultaneous wins of a LP jackpot but must automatically default to payout all LP jackpots in full regardless of other eligible winners. CP:[[154]](#endnote-141) If a large jackpot was to be shared then it can be done via a manual adjustment. CP:[[155]](#endnote-142)

To minimise the probability of a simultaneous jackpot, the system must give the highest priority to resetting jackpot level current amounts throughout the network after a jackpot level hit occurs. CP:[[156]](#endnote-143)

Latency times in this regard will be deemed acceptable at the discretion of the Executive Director,

OLGR.

In the case of opting to share a simultaneous progressive jackpot level win, the jackpot startup amount must be paid in full to all eligible winners, then the contribution portion (LPCA – Start up) of the largest of the reported jackpot amounts (there may be a small difference due to communications latency) is shared equally among the eligible winning players. CP:[[157]](#endnote-144)

The operator must give clear notification and details to the player and venue staff if a LP jackpot is to be shared. CP:[[158]](#endnote-145)

Automating sharing of jackpots in the system is not permitted because it is unlikely a simultaneous win of a large enough amount, will occur that it cannot be paid in full to all eligible winners. Auto sharing support would require a lot of coding and work to handle a highly improbable event.

If a LP jackpot is ever shared due to a simultaneous win, full details and an event report must be submitted in writing to OLGR. CP:[[159]](#endnote-146)

### Advanced Linked Progressive Prize Support

Refer QCOM 3 chapter titled “Advanced Linked Progressive Prize Support” which is currently published as **concept only**. Therefore the concept is **not to be implemented** at this time by QLD EMS.

Once the requirements are finalised in consultation with QLD LMOs, Queensland Clubs and Hotels based monitoring systems will then be required to support the *VM Solution*. (VM as in a jailed scripting environment similar to the QCOM Lua Engine.)

A suitable time-frame for implementation will be established in consultation with QLD LMOs at a later time once the requirements have been finalised.

## System Lockup

The QCOM 3 API function *slRequest()* may be used at the Host’s discretion (as per QCOM v1), for example to award prizes from external jackpot systems.

In QCOM 3, certain operations, for example, credit redemption, now also specifically requires the use of System Lockups.

The EMS must implement a credit redemption QCOM user that follows the same rules and limits as QCOM v1 credit redemption. CP:[[160]](#endnote-147) An example ‘crm’ QCOM user that can be utilised is provided in the QCOM 3 SDK.

## Banknote Validators

The EMS must ensure that only the following banknote denominations may be accepted by Queensland gaming machines (effective since **6 Dec 2013**): CP:[[161]](#endnote-148)

* $5
* $10
* $20
* $50
* $100

The EMS must be able to quickly (< 24 hours) disable specific note denominations on demand (e.g., at the venues request, or for example, to eliminate a problem with a specific note denomination until the Note Acceptor is upgraded). CP:[[162]](#endnote-149)

A set of these note acceptor parameters must be stored for each EGM in the monitoring system. CP:[[163]](#endnote-150)

Possible scenarios EMS must support: CP:[[164]](#endnote-151)

* if a banknote acceptor firmware version is known to have an issue with a specific note denomination, OLGR may direct that that note denomination be disabled for that banknote acceptor firmware version.
* OLGR in the past has also directed a specific note denomination be disabled state-wide.

The host must support firmware upgrades for banknote acceptors via the *bnaFirmwareUpgrade()* QCOM 3 API function. CP:[[165]](#endnote-152) These upgrades must take no longer than **48 hours** to complete across all EGMs. CP:[[166]](#endnote-153)

The host must limit the maximumCash Ticket In value by utilising the *bnaRejectTicket() QCOM 3 API* function*.* CP:[[167]](#endnote-154)Also refer to the OLGR TITO Minimum Technical Requirements document for the value to use here.

The EMS must track and be able to report on the current Note Acceptor firmware and validation set for all its EGMs. CP:[[168]](#endnote-155)

There is no excessive banknote rejected event in QCOM 3. The EMS must now log this event using the **BANKNOTE\_REJECTED** state event and associated meter. The definition of excessive banknotes rejected to use for the logging of the event, may be either that of QCOM v1 or GMNS definition. CP:[[169]](#endnote-156)

## Coin Validators

For Queensland EGMs with coin validators, the EGM coin denomination must be set to **$1** by the EMS. CP:[[170]](#endnote-157)

The host must support firmware upgrades of coin validators via the *caFirmwareUpgrade()* QCOM 3 API function. CP:[[171]](#endnote-158) These upgrades must take no longer than **48 hours** to complete across all EGMs. CP:[[172]](#endnote-159)

## Coin Hoppers

OLGR mandates a default refill (*hopperSetDefaultRefillAmount()*) of **160 coins for $1 token** EGMs. CP:[[173]](#endnote-160)

Also, the hopper collect limit (COLLIM) is typically set at **$50** for a $1 token EGM but may be changed at the gaming venues discretion, so long as it is in-line with OLGR policies. CP:[[174]](#endnote-161)

## Ticket Printers

The EMS host must support firmware upgrades for ticket printers utilising the QCOM 3 API function *tpFirmwareUpgrade()*. CP:[[175]](#endnote-162) These upgrades must take no longer than **48 hours** to complete across all EGMs. CP:[[176]](#endnote-163)

## Specific Promotional/Advisory Messages (SPAM)

SPAM refers to QCOM 3 API function names starting with *“egmSPAM*”. It works the same way as the QCOM v1.x SPAM feature.

When SPAM messages are not being displayed in relation to these requirements, the LMO may use QCOM SPAM feature to display other messages the OLGR considers suitable e.g. messages in relation to other gaming machine related services at the venue, or venue promotions. QCOM SPAM is not to be used for commercial advertising. Feel free to contact the OLGR in relation to any other content sent to the EGMs displays for suitability feedback.

Requirements:

1. If an EGM is disabled by the EMS for any reason/s (except for the meter exclusion period), the highest priority reason must be displayed on the EGM via the SPAM A message with *Prom: True*. The highest priority message to display is determined by the order (if any) in which the conditions must be addressed in the monitoring system. Some mandatory messages to be maintained by the EMS in this regard are: CP:[[177]](#endnote-164)

|  |  |
| --- | --- |
| **Message** | **Duration** |
| “QCOM: INVALID CONFIG” | During an invalid EGM/Game configuration condition. |
| “QCOM: INVALID HASH” | While an EGM fails an EGM content audit |
| “QCOM: INVALID METERS” | During an unreasonable meter increment until reset. |
| “QCOM: HASH TIME-OUT” | The EGM fails to respond to an EGM content audit within a timeout period |
| “QCOM: SENDING EVENT LOG” | The EMS is gathering outstanding EMS events that may have been generated in the EGM while the EGM was offline to the rest of the EMS . |
| “QCOM: SEALED AREA ACCESS” | After any EGM processor door access (refer 2.10) |
| “QCOM: LOCAL HOST LOW MEMORY” | Refer sections 2.7 |
| “QCOM: DENOMINATION CHANGING SOON” | Refer section 2.17. |
| “QCOM: DENOMINATION CHANGED TO $x.xx” | Refer section 2.17. Where x.xx is the new credit denom. Special case; the EGM is not disabled during this message as a result of the change. |

The EMS must erase a message once it is no longer applicable. CP:[[178]](#endnote-165)

1. The EGM should be updated with the current specific promotional message at the start of every session to ensure the correct message is displayed at all times. CP:[[179]](#endnote-166)
2. The EMS must not send SPAM to a single EGM any more frequently than once every **30 seconds** unless it is considered a high priority such as an error condition such as those listed above. This is because EGMs often cycle SPAM with other messages on its display, but will give new SPAM messages priority according to QCOM requirements. So sending SPAM frequently can effectively lock-out other EGM messages from being displayed, which may not be acceptable. CP:[[180]](#endnote-167)
3. The egmSPAMC() message must be used to provide a reason for any credit input disables via QCOM API function egmCreditInputDisable(), while the EGM is in idle mode and play is possible. Use “Credit reached $XXX.XX, cash-in disabled”. See CRLIMIT in this document for the value to substitute for $XXX.XX. CP:[[181]](#endnote-168)

## Gaming Venue Global Enable

The QCOM 3 API function *playDisable()* must be used to close the gaming venue during non-licensed or non-gaming hours (This also allows the EGMs to enter power save/screen save mode overnight). CP:[[182]](#endnote-169)

At this time a gaming venue’s licensed gaming hours are linked directly to their liquor licence trading hours. However, recent legislative amendments coming into force on **1 July 2016** will effectively de-couple the liquor and gaming hours, as such monitoring systems must support the gaming venue’s licensed trading hours with no restrictions. CP:[[183]](#endnote-170) Consideration should also be given to handling 24-hour trading and special events. CP:[[184]](#endnote-171)

Note that a gaming venue’s licensed hours may vary from day to day and week to week, with special gaming hours on certain days of the year. Licensed gaming hours must be stored on a gaming venue basis and the monitoring system must be able to handle either gaming venue specific or global changes to licensed gaming hours. CP:[[185]](#endnote-172)

A gaming venue EMS local host must be able to store several days’ worth of gaming licence hours. Refer section 2.7. CP:[[186]](#endnote-173)

The *playDisable* must also be used to disable the EGMs after any EMS local host processor door access, or event log full, communications issues and issues with local monitoring hosts. CP:[[187]](#endnote-174)

## General Promotional Message

Aka QCOM 3 API function *qcom\_egmGPM().*

This feature may be used at the LMO’s discretion but with respect to the following additional requirement:

If the EMS for any reason disables the whole gaming venue, the highest priority reason must be displayed on the EGM via this broadcast message. Some mandatory messages to be maintained by the LOCAL HOST in this regard are: CP:[[188]](#endnote-175)

Message Period

"LOCAL HOST QUEUE FULL"

During any EMS local host event or meter log full condition if applicable (section 2.35.2.7). CP:[[189]](#endnote-176)

"LOCAL HOST OFFLINE/DISABLED"

This message must be displayed on the EGM whenever the monitoring system is down or it is not possible to leave the EGMs enabled for security reasons (e.g. LOCAL HOST processor door opened & LOCAL HOST program hash failure, host timeout, hash failure.). This message should be substituted or supplemented with a more verbose explanation for the reason for the disable. CP:[[190]](#endnote-177)

The EMS must erase a message once it is no longer applicable. CP:[[191]](#endnote-178)

## Credit Redemption

As per the existing gaming machine regulatory operating environment for Queensland Clubs and Hotels, QLD LMOs will continue to be only party that is authorised by OLGR to add/subtract credit off a gaming machine via QCOM (unless an LMO requests otherwise or course).

QCOM 3 requires a QCOM user to be in the role of a “Credit Redemption Manager” (CRM). The primary reason for this QCOM user is to facilitate the following requirement: It must be possible to perform a cancel credit on a QCOM machine during a loss of communications / communications timeout. CP:[[192]](#endnote-179)

In Queensland Clubs and Hotels OLGR has no objection providing the CRM if an LMO does not want the role. CP:[[193]](#endnote-180) If it is the OLGR then this function will be performed via a QCOM user provided by the OLGR for which the EMS must install in every EGM at RAM clear. CP:[[194]](#endnote-181) In both cases the parameters the CRM requires will be in the control of the LMO and will be as per QCOM v1.6 i.e. **MAXECT**, **COLLIM** and **TICKET**. CP:[[195]](#endnote-182)

OLGR has released a demo CRM source script in the QCOM 3 SDK.

## ECT

Monitoring systems performing any ECTs must keep separate totals of **successful** transfers per transfer type **per EGM** e.g. different types of ECT may include; QCOM LP, promotional jackpot 1, promotional jackpot 2, cash-less player loyalty system and so on. CP:[[196]](#endnote-183)

Any local created gaming venue ECT Meters must be sent to the central EMS host at least **once per day** and every new remote host-local host session upon connection. CP:[[197]](#endnote-184) ECT Meters must be time stamped to identify how recent they are in the system. CP:[[198]](#endnote-185)

If there is more than one source of ECT at a venue, then the venue must be given monthly written reports separately totalling each type of transfer allowing them to reconcile their manual payments with each type of ECT. CP:[[199]](#endnote-186)

### ECT to EGM

Every attempt at an ECT must have an ‘EMS-EGM ECT to EGM’ Event logged (section 2.35.1.9) with full details also covering the type of ECT taking place e.g., if the ECT is associated with an account then an event must be logged in the system for the ECT which includes a public account identifier. CP:[[200]](#endnote-187)

The EMS must not store private or sensitive information into ECT related events. CP:[[201]](#endnote-188)

Any failure of an attempted ECT to EGM must have an ‘EMS-EGM ECT to EGM Timeout’ event logged. CP:[[202]](#endnote-189) Refer s2.35.1.10.

The EMS must ensure that it never attempts an ECT that is greater than the **MAXECT** threshold set on the EGM. CP:[[203]](#endnote-190)

## TITO

Refer to the QCOM v1 Protocol document for a section with notes and requirements concerning AUTHNO generation. CP:[[204]](#endnote-191)

The TITO host system must ensure it is able to apply all the limits as set in all applicable and related OLGR TITO Minimum Technical Requirements documents. CP:[[205]](#endnote-192)

In support of cases where a ticket printer has failed or malfunctioned, the TITO system (via the gaming venue operator) must provide a facility that allows ticket transactions to be **manually redeemable** at a TITO operator terminal by an authorised person. CP:[[206]](#endnote-193) Finding a ticket in the TITO system must be possible by either a manually entered AUTHNO[[207]](#footnote-14), or EGM ID, or ticket serial number (TSER)[[208]](#footnote-15). CP:[[209]](#endnote-194) (In QCOM TITO, it will be typical for the attendant not to have the AUTHNO, as QCOM EGMs intentionally do not reveal this value except on a printed ticket for security reasons.)

The “^” character is a special case and systems must not use it in a cash ticket string field. CP:[[210]](#endnote-195) TITO systems must never use the “^”character in the venue name, venue address or CTEXT fields printed on a cash ticket; otherwise the entire field (or parts thereof) may not be printed. CP:[[211]](#endnote-196) Even though this character is included in the QCOM list of supported printable characters, current ticket printers consider “^” to be a control code and will not print this character or possibly the whole message it is embedded in. Refer QP v1.6 section 2.3.8 for the list of supported printable characters.

There must be no scenario concerning interruptions (or in general) pertaining to any transaction in a TITO system whereby a transaction or cash amount can be lost, duplicated, stolen, deleted before its time, or its state be incorrectly recorded. CP:[[212]](#endnote-197) Lists of specific test cases are highly system dependent, potentially long and are outside the scope of this document, but they must all be thoroughly analysed and tested in every system. CP:[[213]](#endnote-198)

### Ticket Out

There must be no chance of the system causing a double payout scenario (e.g., the player receives a manual payment but then the EGM subsequently is permitted to produce a cash ticket for the credit redemption transaction). CP:[[214]](#endnote-199) Any deviation by an EGM from expected behaviour from the local host / systems point of view must be logged as events to help with diagnosis. CP:[[215]](#endnote-200)

### Ticket In

Any deviation by an EGM from expected behaviour during the ticket-in process from the host’s point of view must be logged by the EMS as events to help with diagnosis. CP:[[216]](#endnote-201)

## EGM Content Auditing

In QCOM 1, content auditing was facilitated by one overall result per EGM. In QCOM 3 content audit in primarily broken down into base (common content) and per game. Both can yield multiple results.

QCOM 3 content auditing must be SHA-256 based as will be evident from datafiles for QCOM 3 machines[[217]](#footnote-16). CP:[[218]](#endnote-202)

The EMS must now separate content auditing into common and per game audit results. CP:[[219]](#endnote-203) OLGR will provide additional new datafiles for this purpose.

A failure of common content audit must disable the whole EGM until the problem is addressed. CP:[[220]](#endnote-204)

A failure of a content audit of a game, must disable just that game until the problem is addressed. CP:[[221]](#endnote-205)

The EMS must ensure EGM reported hashes are correct with respect to the approved hashes list supplied by OLGR. CP:[[222]](#endnote-206) (This excludes *peripheral device content.*)

The EMS must perform an EGM content audit at the following times: CP:[[223]](#endnote-207)

1. After the EGM resumes responding to the EMS after any continuous non-responsive period that **exceeds 60 seconds** in duration.
2. After any EMS local host power up or restart.
3. When requested to do so by the EMS on demand. (There must be a UI in the central EMS host that permits this to be done)
4. Once per day (which must be outside of licensed gaming hours. If the gaming venue is licensed 24 hours a day, then the content audit must be conducted during off peak hours)

The EGM must be play-disabled during an EGM Content Audit conducted under points 1&2. CP:[[224]](#endnote-208)

The EMS must use a different seed each day CP:[[225]](#endnote-209), however if there are any issues in getting the next day’s seeds and hashes, then it is permissible for the EMS to keep using the previous days seeds and hashes. CP:[[226]](#endnote-210)

If an unapproved hash for any content is detected, then an event must be logged (section 2.35.1.4) and the EGM must be disabled until a successful content audit is made. This also requires an event. Refer section 2.35.1.5. CP:[[227]](#endnote-211)

All incidences of invalid program hashes from EGMs must be investigated by the LMO as to the cause. CP:[[228]](#endnote-212)

There must be no facility in the monitoring system or host to override or disable EGM content auditing. CP:[[229]](#endnote-213)

If all or a part of an EGM’s *common content* hashes is seen to change from one approved hash to another approved hash, then the EMS must log an event (section 2.35.1.6) and take no other action. CP:[[230]](#endnote-214)

A change in *game content* (but not the game) may follow the same principle as above. However, if a *game content* change is also indicative of an RTP change, then the maximum frequency in which this can occur is regulated[[231]](#footnote-17) and must be enforced by the LMO. CP:[[232]](#endnote-215)

Finally, with respect to *peripheral content.* The EMS is simply required to be able to store and report on the current state of all EGMs under it. CP:[[233]](#endnote-216) These reports must be able to aid in keeping things like coin/banknote validation set firmware all up to date.

## Meters

The EMS must monitor (record and sanity check) and log raw EGM meters (which in QCOM are EGM gross meters since last EGM RAM clear) according to the requirements in this section. CP:[[234]](#endnote-217) Refer section 2.35.1.3 for the event.

At least one host in the EMS must maintain a set of current raw EGM meters at all times with a latency no less than **10** seconds whenever possible. CP:[[235]](#endnote-218)

The EMS must be ready to permanently log and record a set of raw EGM meters whenever an EGM stops responding. CP:[[236]](#endnote-219)

The EMS must monitor (sanity check) and keep a copy of raw EGM meters an EGM produces. The EMS must permanently save a set of raw EGM meters as events at the following times: CP:[[237]](#endnote-220)

* Once per day at the same time (outside licensed gaming hours if possible).
* Any EGM meter sanity check fail.
* EGM decommissioning (last known meters).
* EGM commissioning (first seen meters).
* EGM RAM clear (last known meters).
* On demand via a command sent by a monitoring system operator personnel.

When the EMS logs a set of meters, it must also record: CP:[[238]](#endnote-221)

* Information that identifies the EGM the meters apply to
* A timestamp

The EMS must use this raw EGM meter data as the basis to produce and log all cumulative and period meters in the EMS. CP:[[239]](#endnote-222) Refer OLGR datafiles.

Anytime an EGM meter changes, a copy must be made on a host in the EMS within **10** seconds. CP:[[240]](#endnote-223) If unable to do so for a period of **10** seconds, new game play on the EGM must be disabled. CP:[[241]](#endnote-224)

Monitoring systems for Queensland clubs and hotels may still utilise **32 bit** EGM meters for a short time, but must be updated to **64 bit meters** asap and no later than the incept date for version 3 or later of the “Data Requirements for Monitored EGMs” document which will require 64 bit meters. CP:[[242]](#endnote-225)

### EGM Meter Increment Sanity checks

The EMS must perform sanity checks on all EGM meter increments as they are received. CP:[[243]](#endnote-226)

The EMS must also perform sanity checks on all EGM meter increments on meters passed from one EMS host to another on their way to the EMS central host. CP:[[244]](#endnote-227)

The EMS should adjust the thresholds listed below to suit their individual operating environments (time between the frequencies of meter transfers). CP:[[245]](#endnote-228)

For any meter failing an increment sanity check, the EMS must log an “Unreasonable meter increment” event with details (refer s2.35.1.18). CP:[[246]](#endnote-229) If the failure was at the EGM interface then the EMS must disable the EGM until the problem is investigated by a qualified and authorised LMO employee and the EGM is deemed fit to be returned to play. CP:[[247]](#endnote-230)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  | **Valid meter increment thresholds**  **(QLD Clubs & Hotels)** | | |  |
| **MeterID** | **Description** | **QUSER#** | **EMSLH\*** | **EMS!** | **Notes** |
| stroke | Games Played | 1 | 300 | See note |  |
| turnover | Turnover | MAXBET | $500 | ” |  |
| wins | Total Wins | $40,000 | $40,000 | ” | Typical. May be set higher as required to handle an approved game’s Maximum Non-Progressive Win. |
| cancelcredit | Cancel Credits | $40,000 | $40,000 | ” | As above. |
| gameswon | Games Won | 1 | 30 | ” |  |
| ectin | Cashless In | See note right | See note right | ” | Each host that can increment this meter must reconcile increments against what it expects. At other times use a value based on the presence of other hosts that can move this meter. |
| ectout | Cashless Out | See note right | See note right | ” | Each host that can increment this meter must reconcile increments against what it expects. At other times use a value based on the presence of other hosts that can move this meter. |
| gambleturnover | Gamble Turnover | $5,100 | $5,100 | ” |  |
| gamblewin | Gamble Win | $11,000 | $11,000 | ” |  |
| lpwins | Link Progressive Wins | $500,000 | $500,000 | ” |  |
| ticketin | Ticket In | Only reasonable when expected | Only reasonable when expected | ” | Each host that can increment this meter must reconcile increments against what it expects. At other times use a value based on the presence of other hosts that can move this meter. |
| ticketincount | Ticket In Count | 1 | 10 | ” |  |
| ticketout | Ticket Out | See right | See right | ” | Each host that can increment this meter must reconcile increments against what it expects. At other times use a value based on the presence of other hosts that can move this meter. |
| ticketoutcount | Ticket Out Count | 1 | 10 | ” | Each host that can increment this meter must reconcile increments against what it expects. At other times use a value based on the presence of other hosts that can move this meter. |
| coinsin | Coins In | 20 | 40 | ” |  |
| cashbox | Cash Box | 20 | 40 | ” |  |
| refills | Refill | 200 | 200 | ” |  |
| coinsout | Coins Out | 20 | 40 | ” |  |
| overpay | Extra Coin Out | 20 | 40 | ” |  |
| notesin | Banknotes In | 1 | 5 | ” |  |
| notesincount | Banknote Count | 1 | 5 | ” |  |
| notesrej | Banknote Rejects | 1 | 5 | ” |  |

# The increment sanity check for 0 secs (which means on-the-fly) **is currently optional to implement**, if implemented, it would be performed by a QCOM user script in the EGM.

\*This column is to be applied by each EMS local host every time it receives one or more meters from the EGM.

! This column is to be applied in the EMS central host based on meters received from all remote venue EMS local hosts. Individual meter increment thresholds may be set at the LMO’s discretion. Thresholds should cater for the possibility of not being able to contact a local host for up to 7 days. A suggestion for setting thresholds is to take a large sample of (adjusted) monthly meters, then for each meter, take the highest value and multiply it by **4** to get a threshold.

The criteria for acceptance with respect to checkpoints in this section is that the sanity checks have been implemented irrespective of the threshold values currently set in the EMS.

### EGM Linked Progressive Contribution Meters

The EMS must conduct an increment sanity check on all progressive contribution amounts equivalent to the EGM turnover meter. CP:[[248]](#endnote-231) If a problem is detected, the host must ignore the contribution, disable the EGM and log an “EMS-EGM LP Contr. Fail” event with full details. CP:[[249]](#endnote-232) Refer section 2.35.1.19.

## EGM Events

The EMS must collate and store all received QCOM 3 defined EGM generated events and event data in the EMS central host. CP:[[250]](#endnote-233)

EGM events received by the EMS must be stored in at least two distinct physical storage locations in the EMS at all times; (the EGM may be counted as one). Ultimately at least one of which must be at a central site or sites. CP:[[251]](#endnote-234)

Unless stated otherwise for a particular event type (TBA), the host system must store all events received from an EGM (for **5 years** minimum[[252]](#footnote-18)). CP:[[253]](#endnote-235)

The EMS must apply the sanity checks to all event data whenever possible and log error events if any issues are found. CP:[[254]](#endnote-236) Error events pertaining to issues with EGM events must be linked to the EGM event by some means; e.g. a reference to the EGM serial number and event serial number embedded in the error event. CP:[[255]](#endnote-237)

Whenever the EMS reports or displays an event’s timestamp it must also display the event’s machine operating time (MOT) value. CP:[[256]](#endnote-238)

## EMS Generated Events

OLGR may specify new host or monitoring system events periodically, which must be supported by the EMS within **6** months of their release. CP:[[257]](#endnote-239)

All events must be logged with sufficient data pertaining to the event being logged. CP:[[258]](#endnote-240) Refer QCOM v1.6 for examples. Until this information is added, event data logged must be approved by OLGR.

### EMS Generated Events Concerning EGMs

The following events must be generated by the EMS. CP:[[259]](#endnote-241) Event codes may be assigned at the operator’s discretion.

The text appearing in quotes below is the desired text which to be used in event reports for OLGR but is not mandatory of the EMS, which can use a different event descriptor.

All EMS generated events must: CP:[[260]](#endnote-242)

* Be timestamped with gaming venue/EMS local time upon creation as applicable.
* Contain an event serial number applied by the host that created the event.
* Contain supporting embedded data with respect to the event’s definition e.g. a failure event; the embedded data should say what exactly failed and by how much.
* If the EMS generates events with embedded data that if known, could compromise the integrity of a gaming related system; e.g. ticket-out AUTHO’s, or jackpot trigger values; then these events must be kept secret by the system and not be able to be disclosed to any person.

The EMS may include additional data in events as needed.

All cash movements in or out of an EGM, other than those pertaining to coins and banknotes, must result in an event in the EMS; if the EGM doesn’t log an event for it, then the EMS must do so. CP:[[261]](#endnote-243)

### “EMS-EGM Stopped Responding"

CP:[[262]](#endnote-244)

Logged when an EMS host detected the EGM has stopped responding for a timeout period. Refer s2.13.

### "EMS-EGM Resumed Responding"

CP:[[263]](#endnote-245)

Logged whenever the EGM makes a successful connection to an EMS host via the QCOM API.

Related, section 2.14.

### “EMS-EGM Raw Meters”

CP:[[264]](#endnote-246)

This event must contains the EGM raw meters at the time the event was generated. Refer sections s2.15, s2.33 & s2.33.

### "EMS-EGM Content Audit Fail"

CP:[[265]](#endnote-247)

The EMS received a content audit response from a QCOM 3 EGM which did not match the hashes the EMS was expecting for that EGM.

Refer section 2.32.

### “EMS-EGM Content Audit OK”

CP:[[266]](#endnote-248)

This event must be logged whenever an EGM returns a correct content audit response after any invalid program hash was detected from that EGM. Logging this even upon any successful hash result is also acceptable but not mandatory.

Refer section 2.32.

### “EMS-EGM Common Content Changed”

CP:[[267]](#endnote-249)

This event must be logged whenever the EMS detects a change in an EGM’s common content from one approved set to another approved set.

Refer section 2.32.

### “EMS -EGM RAM Clear Detected”

CP:[[268]](#endnote-250)

Logged whenever the EMS detects an EGM has been RAM cleared. Refer Section 2.15.

### “EMS-EGM Meters Logged”

CP:[[269]](#endnote-251)

Logged whenever the EMS logs a set of raw EGM meters.

### “EMS-EGM ECT to EGM”

CP:[[270]](#endnote-252)

As a general rule, any type of ECT to EGM from the EMS must have an event that clearly identifies the reason for the transfer as well as any other information pertinent to the transfer.

Refer s2.30.1.

### “EMS-EGM ECT to EGM Timeout”

CP:[[271]](#endnote-253)

The EMS attempted an ECT to EGM, but it did not receive an acknowledgement in time.

### "EMS-EGM Play Outside Licensed Hours"

CP:[[272]](#endnote-254)

The EMS detected an increment in EGM stroke during non-licensed gaming hours (refer gaming venue open/close times). Note, a current game in play and communication time-outs must be accounted for when detecting this event.

### "EMS-EGM Disabled By System"

CP:[[273]](#endnote-255)

This event must be logged by the EMS whenever an EGM is specifically disabled for some reason other than normal resumed responding procedure. This event must be logged immediately following the event which identifies the reason for the disable or have the reason embedded. This event is not applicable for incidences which disable an entire gaming venue.

### "EMS-EGM Enabled By System"

CP:[[274]](#endnote-256)

This event must be logged by the EMS after the occurrence of the previously event and all problems which caused the EGM to be disabled have been addressed.

### “EMS-EGM SAP Contribution Discarded”

CP:[[275]](#endnote-257)

This event is logged by the EMS for all resident SAP levels in an EGM, whenever a SAP level current contribution amount is not automatically restored after an EGM RAM clear, or is discarded\* by the EMS for any reason. \*This may be as the result of either a decommissioned EGM or EGM game conversion.

Related: section 2.15.

### “EMS-EGM SAP Game Initial Contribution”

CP:[[276]](#endnote-258)

This event is logged the EMS, for all resident SAP levels in an SAP EGM, whenever a SAP level contribution amount, is added after an EGM RAM clear.

### “EMS-EGM Unexpected EGM Serial Number”

CP:[[277]](#endnote-259)

The EMS received an incorrect EGM serial number for this EGM.

### “EMS-EGM Incorrect EGM Configuration”

Refer 2.14.

### “EMS-EGM Unreasonable Meter Increment”

CP:[[278]](#endnote-260)

This concerns the monitoring of raw EGM meters. Refer section 2.33.1.

### “EMS-EGM Unreasonable LP Contribution”

CP:[[279]](#endnote-261)

Refer section 2.33.2

### “EMS-EGM QCOM 3 unknown QMA”

CP:[[280]](#endnote-262)

Refer section 2.5.1.1. Record in the event: QMA fingerprint, venue and EGM UID.

### Events Generated by Local Hosts

Not all EMS have gaming venue local hosts, if it does, then this is a list of events which the local hosts should be logging.

All local host generated events should include the following data in each event: CP:[[281]](#endnote-263)

* A local host uid (may be appended by the next host up if desired)
* A local host event serial number

### "Processor Door Opened"

CP:[[282]](#endnote-264)

This event must disable the SC and the EGMs under it, until subsequently re-enabled by the host system computer.

### "Processor Door Closed"

CP:[[283]](#endnote-265)

### "Power Off Processor Door Access"

CP:[[284]](#endnote-266)

### “RTC Refreshed”

CP:[[285]](#endnote-267)

Refer section 2.9.1.

### “Power Down”

CP:[[286]](#endnote-268)

### “Power Up”

CP:[[287]](#endnote-269)

### “Event Log Full”

CP:[[288]](#endnote-270)

Refer section 2.7.

### Events Generated by the EMS

CP:[[289]](#endnote-271)

### “Gaming Venue Opened”

CP:[[290]](#endnote-272)

Logged when the gaming venue is enabled initially at the start of licensed gaming hours.

### “Gaming Venue Closed”

CP:[[291]](#endnote-273)

Logged when the gaming venue is disabled at the end of licensed gaming hours.

### “Machine Association Change”

CP:[[292]](#endnote-274)

Logged whenever any of the current state of following set of data for a given machine changes in the system:

* MID
* Machine logicUID
* Machine serial number
* Venue

# Revision History

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Version** | **Changes** | **Who** | **Release Date** | **Incept Date** |
| 1.0 draft 1  Edocs#1579648 | Initial | JA/RL | 16 Mar 2016 (via email) | TBA |
| 1.0 draft 2  Edocs#1580260 | See below | RL | 20 May 2016 (via email) | TBA |
| * Changes as a result of feedback to the first draft. See change marked text throughout document for more information. * Some sections titles were repeated (directly related but different text). Merged those duplicate sections. * Reviewed section content auditing (section 2.32). * Clarified LP broadcasts. Refer section 2.20.1. * Calling for LMO submissions in relation to the QCOM 3 LAN configuration. Refer section 2.6. * Ported over applicable requirements from QCOM v1.6 SC procedures pertaining to LP support. * Added section concerning advanced LP support (2.20.3). * Added section on Credit Redemption (2.29). * Added section on EGM configuration (2.16). | | | | |
| 1.0  Edocs#1605403 | See below | RL | 1 Jul 2016 | TBA |
| * Fixed some issues with paragraph numbering resetting in various sections. * NTP traffic does not require encryption (s2.6.3). * External jackpots triggered in-machine must use a dedicated QCOM user (s2.19). | | | | |
| 1.0.1  Edocs#1605403 | See below | RL | 10 Nov 2016 | TBA |
| * Updated to new DJAG template * Updated the copyright notice to match the primary QCOM 3 document’s copyright statement. | | | | |
| 1.1 draft rc2 | See below | RL | 8 Nov 2021 | TBA |
| * Clarified mandatory functionality * Refer tracked changes * Added requirement checkpoints (endnotes) | | | | |
| 1.1 draft rc3 | See below | RL | 15 Dec 2021 | TBA |
| * Added new section on prerequisite knowledge. * Added old QCOM requirement for cancel credit during communications timeout * Clarified the use of the term “recommended” * Assigned MRI numbers to all endnotes. | | | | |
| 1.1  Edocs#2131083 | See below | RL | 28 Nov 2022 | tba |
| * Added requirement for LP timeout play disable and tidied up section. Refer s2.20.1 * Add new MRI’s: 269..270 * Clarification based on feedback since rc3 | | | | |
|  |  |  |  |  |

**Under consideration**

* Consider moving all QLD specific requirements into a single section in this docx if this works better.
* Copy the list of LMO privileged QCOM API functions (from the QCOM 3 summary xlsx) into this document. Then, for each, list any specific LMO/EMS requirements / actions.
  + Also, cross reference with existing EMS requirements in this document. This will ensure full coverage of all intended QCOM 3 requirements at the API level.
* If OLGR provides QCOM 3 protocol app, then it may cover a number of requirements in this document.

# Checkpoints

Each endnote in this document (listed below) denotes an EMS requirement aka a test for QCOM 3 EMS compliance testing.

In all correspondence, always reference the MRI number.

Do not reference the cp:<end-note numbers> as endnote numbers will change over time.

Note: if this document contains tracked changes, then ensure all changes are being shown to ensure endnote links all work properly.

***Next free MRI number: 275***

1. Ref: https://en.wikipedia.org/wiki/IPv6 [↑](#footnote-ref-1)
2. MRI: 273 [↑](#endnote-ref-1)
3. MRI: 274 [↑](#endnote-ref-2)
4. MRI: 001 [↑](#endnote-ref-3)
5. Properly tested. If 3rd party protocols, then it is patched and system support should demonstrate (internal controls) that they will be monitoring for all relevant critical updates. [↑](#footnote-ref-2)
6. MRI: 002 [↑](#endnote-ref-4)
7. MRI: 003 [↑](#endnote-ref-5)
8. MRI: 004 [↑](#endnote-ref-6)
9. MRI: 005 [↑](#endnote-ref-7)
10. MRI: 006 [↑](#endnote-ref-8)
11. MRI: 007 [↑](#endnote-ref-9)
12. A deadline for this will be approximately in mid 2023. [↑](#footnote-ref-3)
13. MRI: 008 [↑](#endnote-ref-10)
14. MRI: 009 [↑](#endnote-ref-11)
15. There will be a set of default QCOM 3 user apps, most being the LMO’s (at least eventually) and some OLGR's, that the EMS must install on all QCOM 3 EGMs from RAM clear. [↑](#footnote-ref-4)
16. MRI: 010 [↑](#endnote-ref-12)
17. MRI: 271 [↑](#endnote-ref-13)
18. MRI: 011 [↑](#endnote-ref-14)
19. MRI: 012 [↑](#endnote-ref-15)
20. The QCOM API summary sheet lists which API function may be privileged to multiple QCOM users. [↑](#footnote-ref-5)
21. MRI: 013 [↑](#endnote-ref-16)
22. MRI: 014 [↑](#endnote-ref-17)
23. MRI: 015 [↑](#endnote-ref-18)
24. MRI: 016 [↑](#endnote-ref-19)
25. MRI: 017 [↑](#endnote-ref-20)
26. MRI: 018 [↑](#endnote-ref-21)
27. MRI: 019 [↑](#endnote-ref-22)
28. MRI: 020 [↑](#endnote-ref-23)
29. MRI: 021 [↑](#endnote-ref-24)
30. MRI: 022 [↑](#endnote-ref-25)
31. MRI: 023 [↑](#endnote-ref-26)
32. MRI: 024 [↑](#endnote-ref-27)
33. MRI: 025 [↑](#endnote-ref-28)
34. MRI: 026 [↑](#endnote-ref-29)
35. MRI: 027 [↑](#endnote-ref-30)
36. MRI: 028 [↑](#endnote-ref-31)
37. MRI: 029 [↑](#endnote-ref-32)
38. MRI: 030 [↑](#endnote-ref-33)
39. MRI: 031 [↑](#endnote-ref-34)
40. MRI: 032 [↑](#endnote-ref-35)
41. MRI: 033 [↑](#endnote-ref-36)
42. MRI: 034 [↑](#endnote-ref-37)
43. MRI: 035 [↑](#endnote-ref-38)
44. MRI: 036 [↑](#endnote-ref-39)
45. MRI: 037 [↑](#endnote-ref-40)
46. MRI: 038 [↑](#endnote-ref-41)
47. MRI: 039 [↑](#endnote-ref-42)
48. MRI: 040 [↑](#endnote-ref-43)
49. MRI: 041 [↑](#endnote-ref-44)
50. MRI: 042 [↑](#endnote-ref-45)
51. MRI: 043 [↑](#endnote-ref-46)
52. MRI: 044 [↑](#endnote-ref-47)
53. MRI: 045 [↑](#endnote-ref-48)
54. MRI: 046 [↑](#endnote-ref-49)
55. Refer to the QCOM 3 SDK, autonomous example QCOM user called “echo”. [↑](#footnote-ref-6)
56. MRI: 047 [↑](#endnote-ref-50)
57. https://en.wikipedia.org/wiki/Message\_authentication\_code [↑](#footnote-ref-7)
58. MRI: 048 [↑](#endnote-ref-51)
59. MRI: 049 [↑](#endnote-ref-52)
60. MRI: 050 [↑](#endnote-ref-53)
61. MRI: 051 [↑](#endnote-ref-54)
62. MRI: 052 [↑](#endnote-ref-55)
63. MRI: 053 [↑](#endnote-ref-56)
64. MRI: 054 [↑](#endnote-ref-57)
65. MRI: 055 [↑](#endnote-ref-58)
66. MRI: 056 [↑](#endnote-ref-59)
67. MRI: 057 [↑](#endnote-ref-60)
68. MRI: 058 [↑](#endnote-ref-61)
69. MRI: 059 [↑](#endnote-ref-62)
70. MRI: 060 [↑](#endnote-ref-63)
71. MRI: 061 [↑](#endnote-ref-64)
72. MRI: 062 [↑](#endnote-ref-65)
73. MRI: 063 [↑](#endnote-ref-66)
74. MRI: 064 [↑](#endnote-ref-67)
75. MRI: 065 [↑](#endnote-ref-68)
76. MRI: 066 [↑](#endnote-ref-69)
77. MRI: 067 [↑](#endnote-ref-70)
78. MRI: 068 [↑](#endnote-ref-71)
79. MRI: 069 [↑](#endnote-ref-72)
80. MRI: 070 [↑](#endnote-ref-73)
81. MRI: 071 [↑](#endnote-ref-74)
82. MRI: 072 [↑](#endnote-ref-75)
83. MRI: 073 [↑](#endnote-ref-76)
84. MRI: 074 [↑](#endnote-ref-77)
85. MRI: 075 [↑](#endnote-ref-78)
86. MRI: 076 [↑](#endnote-ref-79)
87. MRI: 077 [↑](#endnote-ref-80)
88. MRI: 078 [↑](#endnote-ref-81)
89. MRI: 079 [↑](#endnote-ref-82)
90. MRI: 080 [↑](#endnote-ref-83)
91. MRI: 081 [↑](#endnote-ref-84)
92. MRI: 082 [↑](#endnote-ref-85)
93. MRI: 083 [↑](#endnote-ref-86)
94. MRI: 084 [↑](#endnote-ref-87)
95. OLGR may request a dump of the current table for audits or investigations. In the future this will be provided to OLGR via datafiles. [↑](#footnote-ref-8)
96. MRI: 085 [↑](#endnote-ref-88)
97. “hard-coded data” means data that if changed would also change the result of an EGM content audit result. [↑](#footnote-ref-9)
98. MRI: 086 [↑](#endnote-ref-89)
99. MRI: 087 [↑](#endnote-ref-90)
100. MRI: 088 [↑](#endnote-ref-91)
101. MRI: 089 [↑](#endnote-ref-92)
102. MRI: 090 [↑](#endnote-ref-93)
103. MRI: 091 [↑](#endnote-ref-94)
104. MRI: 092 [↑](#endnote-ref-95)
105. MRI: 093 [↑](#endnote-ref-96)
106. MRI: 094 [↑](#endnote-ref-97)
107. MRI: 095 [↑](#endnote-ref-98)
108. MRI: 096 [↑](#endnote-ref-99)
109. MRI: 097 [↑](#endnote-ref-100)
110. MRI: 098 [↑](#endnote-ref-101)
111. MRI: 099 [↑](#endnote-ref-102)
112. *The reason why the scope of most parameters is set at ‘per EGM’, is to make the EMS more versatile. For example, if one model EGM has a bug in its reserve feature, then the reserve feature can be disabled in just those EGMs.* [↑](#footnote-ref-10)
113. ‘External’, means any non-gaming machine triggered jackpots. [↑](#footnote-ref-11)
114. MRI: 100 [↑](#endnote-ref-103)
115. MRI: 101 [↑](#endnote-ref-104)
116. MRI: 102 [↑](#endnote-ref-105)
117. MRI: 103 [↑](#endnote-ref-106)
118. MRI: 104 [↑](#endnote-ref-107)
119. MRI: 105 [↑](#endnote-ref-108)
120. MRI: 106 [↑](#endnote-ref-109)
121. MRI: 107 [↑](#endnote-ref-110)
122. QCOM 3 games indicate compatible levels via their progressive level properties [↑](#footnote-ref-12)
123. MRI: 108 [↑](#endnote-ref-111)
124. MRI: 109 [↑](#endnote-ref-112)
125. MRI: 110 [↑](#endnote-ref-113)
126. MRI: 111 [↑](#endnote-ref-114)
127. MRI: 112 [↑](#endnote-ref-115)
128. MRI: 113 [↑](#endnote-ref-116)
129. MRI: 114 [↑](#endnote-ref-117)
130. MRI: 115 [↑](#endnote-ref-118)
131. MRI: 116 [↑](#endnote-ref-119)
132. MRI: 117 [↑](#endnote-ref-120)
133. MRI: 118 [↑](#endnote-ref-121)
134. MRI: 119 [↑](#endnote-ref-122)
135. MRI: 120 [↑](#endnote-ref-123)
136. MRI: 121 [↑](#endnote-ref-124)
137. MRI: 122 [↑](#endnote-ref-125)
138. MRI: 123 [↑](#endnote-ref-126)
139. MRI: 124 [↑](#endnote-ref-127)
140. MRI: 125 [↑](#endnote-ref-128)
141. MRI: 126 [↑](#endnote-ref-129)
142. MRI: 127 [↑](#endnote-ref-130)
143. MRI: 128 [↑](#endnote-ref-131)
144. MRI: 129 [↑](#endnote-ref-132)
145. MRI: 130 [↑](#endnote-ref-133)
146. MRI: 269 [↑](#endnote-ref-134)
147. Including negative adjustments (but negative adjustments should be rare as they indicate an issue has occurred) [↑](#footnote-ref-13)
148. MRI: 131 [↑](#endnote-ref-135)
149. MRI: 132 [↑](#endnote-ref-136)
150. MRI: 270 [↑](#endnote-ref-137)
151. MRI: 133 [↑](#endnote-ref-138)
152. MRI: 134 [↑](#endnote-ref-139)
153. MRI: 135 [↑](#endnote-ref-140)
154. MRI: 136 [↑](#endnote-ref-141)
155. MRI: 137 [↑](#endnote-ref-142)
156. MRI: 138 [↑](#endnote-ref-143)
157. MRI: 139 [↑](#endnote-ref-144)
158. MRI: 140 [↑](#endnote-ref-145)
159. MRI: 141 [↑](#endnote-ref-146)
160. MRI: 142 [↑](#endnote-ref-147)
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162. MRI: 144 [↑](#endnote-ref-149)
163. MRI: 145 [↑](#endnote-ref-150)
164. MRI: 146 [↑](#endnote-ref-151)
165. MRI: 147 [↑](#endnote-ref-152)
166. MRI: 148 [↑](#endnote-ref-153)
167. MRI: 149 [↑](#endnote-ref-154)
168. MRI: 150 [↑](#endnote-ref-155)
169. MRI: 151 [↑](#endnote-ref-156)
170. MRI: 152 [↑](#endnote-ref-157)
171. MRI: 153 [↑](#endnote-ref-158)
172. MRI: 154 [↑](#endnote-ref-159)
173. MRI: 155 [↑](#endnote-ref-160)
174. MRI: 156 [↑](#endnote-ref-161)
175. MRI: 157 [↑](#endnote-ref-162)
176. MRI: 158 [↑](#endnote-ref-163)
177. MRI: 159 [↑](#endnote-ref-164)
178. MRI: 160 [↑](#endnote-ref-165)
179. MRI: 161 [↑](#endnote-ref-166)
180. MRI: 162 [↑](#endnote-ref-167)
181. MRI: 163 [↑](#endnote-ref-168)
182. MRI: 164 [↑](#endnote-ref-169)
183. MRI: 165 [↑](#endnote-ref-170)
184. MRI: 166 [↑](#endnote-ref-171)
185. MRI: 167 [↑](#endnote-ref-172)
186. MRI: 168 [↑](#endnote-ref-173)
187. MRI: 169 [↑](#endnote-ref-174)
188. MRI: 170 [↑](#endnote-ref-175)
189. MRI: 171 [↑](#endnote-ref-176)
190. MRI: 172 [↑](#endnote-ref-177)
191. MRI: 173 [↑](#endnote-ref-178)
192. MRI: 174 [↑](#endnote-ref-179)
193. MRI: 175 [↑](#endnote-ref-180)
194. MRI: 176 [↑](#endnote-ref-181)
195. MRI: 177 [↑](#endnote-ref-182)
196. MRI: 178 [↑](#endnote-ref-183)
197. MRI: 179 [↑](#endnote-ref-184)
198. MRI: 180 [↑](#endnote-ref-185)
199. MRI: 181 [↑](#endnote-ref-186)
200. MRI: 182 [↑](#endnote-ref-187)
201. MRI: 183 [↑](#endnote-ref-188)
202. MRI: 184 [↑](#endnote-ref-189)
203. MRI: 185 [↑](#endnote-ref-190)
204. MRI: 186 [↑](#endnote-ref-191)
205. MRI: 187 [↑](#endnote-ref-192)
206. MRI: 188 [↑](#endnote-ref-193)
207. Note that the AUTHO of unclaimed tickets must be kept a secret within the TITO system and not accessible by anyone. [↑](#footnote-ref-14)
208. In TITO, when a ticket print fails, an attendant can retrieve all ticket details via EGM audit mode except for the AUTHNO; thus searches in the TITO database not based on AUTHNO but TSER will be more common. [↑](#footnote-ref-15)
209. MRI: 189 [↑](#endnote-ref-194)
210. MRI: 190 [↑](#endnote-ref-195)
211. MRI: 191 [↑](#endnote-ref-196)
212. MRI: 192 [↑](#endnote-ref-197)
213. MRI: 193 [↑](#endnote-ref-198)
214. MRI: 194 [↑](#endnote-ref-199)
215. MRI: 195 [↑](#endnote-ref-200)
216. MRI: 196 [↑](#endnote-ref-201)
217. https://www.publications.qld.gov.au/dataset/data-requirements-for-monitored-gaming-machines [↑](#footnote-ref-16)
218. MRI: 197 [↑](#endnote-ref-202)
219. MRI: 198 [↑](#endnote-ref-203)
220. MRI: 199 [↑](#endnote-ref-204)
221. MRI: 200 [↑](#endnote-ref-205)
222. MRI: 201 [↑](#endnote-ref-206)
223. MRI: 202 [↑](#endnote-ref-207)
224. MRI: 203 [↑](#endnote-ref-208)
225. MRI: 204 [↑](#endnote-ref-209)
226. MRI: 205 [↑](#endnote-ref-210)
227. MRI: 206 [↑](#endnote-ref-211)
228. MRI: 207 [↑](#endnote-ref-212)
229. MRI: 208 [↑](#endnote-ref-213)
230. MRI: 209 [↑](#endnote-ref-214)
231. Refer Queensland [Gaming Machine Regulation 2002](https://www.legislation.qld.gov.au/LEGISLTN/CURRENT/G/GamingMachR02.pdf) [↑](#footnote-ref-17)
232. MRI: 210 [↑](#endnote-ref-215)
233. MRI: 211 [↑](#endnote-ref-216)
234. MRI: 212 [↑](#endnote-ref-217)
235. MRI: 213 [↑](#endnote-ref-218)
236. MRI: 214 [↑](#endnote-ref-219)
237. MRI: 215 [↑](#endnote-ref-220)
238. MRI: 216 [↑](#endnote-ref-221)
239. MRI: 217 [↑](#endnote-ref-222)
240. MRI: 218 [↑](#endnote-ref-223)
241. MRI: 219 [↑](#endnote-ref-224)
242. MRI: 220 [↑](#endnote-ref-225)
243. MRI: 221 [↑](#endnote-ref-226)
244. MRI: 222 [↑](#endnote-ref-227)
245. MRI: 223 [↑](#endnote-ref-228)
246. MRI: 224 [↑](#endnote-ref-229)
247. MRI: 225 [↑](#endnote-ref-230)
248. MRI: 226 [↑](#endnote-ref-231)
249. MRI: 227 [↑](#endnote-ref-232)
250. MRI: 228 [↑](#endnote-ref-233)
251. MRI: 229 [↑](#endnote-ref-234)
252. Refer OLGR Monitoring System Minimum Technical Requirements current version. [↑](#footnote-ref-18)
253. MRI: 230 [↑](#endnote-ref-235)
254. MRI: 231 [↑](#endnote-ref-236)
255. MRI: 232 [↑](#endnote-ref-237)
256. MRI: 233 [↑](#endnote-ref-238)
257. MRI: 234 [↑](#endnote-ref-239)
258. MRI: 235 [↑](#endnote-ref-240)
259. MRI: 236 [↑](#endnote-ref-241)
260. MRI: 237 [↑](#endnote-ref-242)
261. MRI: 238 [↑](#endnote-ref-243)
262. MRI: 239 [↑](#endnote-ref-244)
263. MRI: 240 [↑](#endnote-ref-245)
264. MRI: 241 [↑](#endnote-ref-246)
265. MRI: 242 [↑](#endnote-ref-247)
266. MRI: 243 [↑](#endnote-ref-248)
267. MRI: 244 [↑](#endnote-ref-249)
268. MRI: 245 [↑](#endnote-ref-250)
269. MRI: 246 [↑](#endnote-ref-251)
270. MRI: 247 [↑](#endnote-ref-252)
271. MRI: 248 [↑](#endnote-ref-253)
272. MRI: 249 [↑](#endnote-ref-254)
273. MRI: 250 [↑](#endnote-ref-255)
274. MRI: 251 [↑](#endnote-ref-256)
275. MRI: 252 [↑](#endnote-ref-257)
276. MRI: 253 [↑](#endnote-ref-258)
277. MRI: 254 [↑](#endnote-ref-259)
278. MRI: 255 [↑](#endnote-ref-260)
279. MRI: 256 [↑](#endnote-ref-261)
280. MRI: 257 [↑](#endnote-ref-262)
281. MRI: 258 [↑](#endnote-ref-263)
282. MRI: 259 [↑](#endnote-ref-264)
283. MRI: 260 [↑](#endnote-ref-265)
284. MRI: 261 [↑](#endnote-ref-266)
285. MRI: 262 [↑](#endnote-ref-267)
286. MRI: 263 [↑](#endnote-ref-268)
287. MRI: 264 [↑](#endnote-ref-269)
288. MRI: 265 [↑](#endnote-ref-270)
289. MRI: 266 [↑](#endnote-ref-271)
290. MRI: 267 [↑](#endnote-ref-272)
291. MRI: 268 [↑](#endnote-ref-273)
292. MRI: 272 [↑](#endnote-ref-274)