

Office of Liquor and Gaming Regulation

# QCOM 3 Monitoring System Requirements

Version 1.0.2



Queensland  
Government

*© The State of Queensland (Department of Justice and Attorney-General) 2020. Copyright protects this publication. The State of Queensland has no objection to this material being reproduced but asserts its right to be recognised as author of its original material and the right to have its material remain unaltered. Enquiries should be addressed to [crown.copyright@qld.gov.au](mailto:crown.copyright@qld.gov.au).*

*The information contained herein is subject to change without notice. The copyright owner shall not be liable for technical or other errors or omissions contained herein. The reader/user accepts all risks and responsibility for losses, damages, costs and other consequences resulting directly or indirectly from using this information.*

**For further information, please contact the Office of Liquor and Gaming Regulation on 13 QGOV (13 74 68) or visit [www.business.qld.gov.au/industry/liquor-gaming](http://www.business.qld.gov.au/industry/liquor-gaming)**

# Contents

<b>1</b>	<b>Introduction .....</b>	<b>4</b>
1.1	Terms and abbreviations .....	4
<b>2</b>	<b>Requirements .....</b>	<b>5</b>
2.1	General .....	5
2.2	The QCOM 3 operating environment.....	5
2.3	The gaming venue EGM LAN .....	7
2.4	Offline operation.....	8
2.5	Host fault tolerance and data integrity .....	9
2.6	Timekeeping .....	9
2.7	EGM processor door access.....	10
2.8	Local host RAM reset recovery policies.....	10
2.9	Local host power-up.....	10
2.10	EGM not responding .....	10
2.11	EGM resumed responding .....	10
2.12	EGM factory reset.....	11
2.13	EGM configuration .....	11
2.14	EGM game configuration .....	11
2.15	EGM parameters.....	12
2.16	External jackpot information (EXTJIP).....	13
2.17	Progressive jackpots.....	13
2.18	System lockup.....	16
2.19	Banknote validators .....	16
2.20	Coin validators .....	16
2.21	Coin hoppers.....	16
2.22	Ticket printers .....	16
2.23	Specific promotional/advisory messages (SPAM) .....	17
2.24	Gaming venue global enable .....	18
2.25	General promotional message.....	18
2.26	Credit redemption .....	19
2.27	ECT.....	19
2.28	TITO.....	19
2.29	EGM content auditing .....	20
2.30	Meters .....	21
2.31	EGM events .....	24
2.32	EMS generated events .....	24
2.32.1.1	'EMS-EGM Stopped Responding' .....	25
2.32.1.2	'EMS-EGM Resumed Responding' .....	25
2.32.1.3	'EMS-EGM Raw Meters' .....	25
2.32.1.4	'EMS-EGM Content Audit Fail' .....	25
2.32.1.5	'EMS-EGM Content Audit OK' .....	25
2.32.1.6	'EMS-EGM Common Content Changed' .....	25
2.32.1.7	'EMS -EGM RAM Clear Detected' .....	25
2.32.1.8	'EMS-EGM Meters Logged' .....	25
2.32.1.9	'EMS-EGM ECT to EGM' .....	26

2.32.1.10	'EMS-EGM ECT to EGM Timeout'	26
2.32.1.11	'EMS-EGM Play Outside Licensed Hours'	26
2.32.1.12	'EMS-EGM Disabled By System'	26
2.32.1.13	'EMS-EGM Enabled By System'	26
2.32.1.14	'EMS-EGM SAP Contribution Discarded'	26
2.32.1.15	'EMS-EGM SAP Game Initial Contribution'	26
2.32.1.16	'EMS-EGM Unexpected EGM Serial Number'	26
2.32.1.17	'EMS-EGM Incorrect EGM Configuration'	26
2.32.1.18	'EMS-EGM Unreasonable Meter Increment'	26
2.32.1.19	'EMS-EGM Unreasonable LP Contribution'	26
2.32.2.1	'Processor Door Opened'	27
2.32.2.2	'Processor Door Closed'	27
2.32.2.3	'Power Off Processor Door Access'	27
2.32.2.4	'RTC Refreshed'	27
2.32.2.5	'Power Down'	27
2.32.2.6	'Power Up'	27
2.32.2.7	'Event Log Full'	27
2.32.2.8	'Gaming Venue Opened'	27
2.32.2.9	'Gaming Venue Closed'	27
<b>3</b>	<b>Revision history</b>	<b>28</b>

# 1 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 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.

## 1.1 Terms and abbreviations

### **Internet protocol version 6 (IPv6)**

The most recent version of the internet protocol (IP) / communications protocol that provides an identification and location system for computers on networks and routes traffic across the Internet<sup>i</sup>

### **Host**

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

### **Local host**

Refers to 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

Read 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 'monitoring system' for short

For all other terms and abbreviations, refer to the QCOM 3 Interface Specification document.

---

<sup>i</sup> Ref.: [en.wikipedia.org/wiki/IPv6](http://en.wikipedia.org/wiki/IPv6)

## 2 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 these requirements.

### 2.1 General

Monitoring systems 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.

Monitoring systems must not assume that EGM meters it receives from the EGMs or another host in the EMS are always correct and must apply sanity checks across each interface in accordance with the requirements in this document.

All hosts in the monitoring system must be hardened against any type of malformed message attack on any of its communications ports.

Local hosts must be able to support a minimum of **32 EGMs each** with up to minimum **32 enabled games and minimum up to 256 resident games** (unconfigured).

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

#### **QCOM 3 interface specification new versions**

OLGR may increase the scope of the EGM interface at any time. OLGR will attempt to make new enhancements (by adding additional APIs) such that properly programmed existing EGMs and the monitoring system should automatically ignore any new information until they are programmed to handle it, without any side effects.

It is the host's responsibility to communicate to the EGM via the correct interface version. The EGM reports its interface version in the QCOM 3 API function *idlInterfaceVersion()*.

### 2.2 The QCOM 3 operating environment

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.

The EMS must be able to produce a report of all installed certificates (see below) via an interface or methodology that also provides authentication of the report contents (e.g. https, digitally signed emails etc.).

#### 2.2.1 Authorities

##### **QMA**

The QMA for monitoring systems monitoring and controlling gaming machines operating in Queensland clubs and hotels is OLGR.

The EMS must have an interface that allows QMA certificates to be securely installed. The interface must be access control protected for which only the QMA has access rights.

It must not be possible to add or change the QMA certificates installed in the EMS, other than via the above interface or by altering approved EMS software.

The EMS must be hardcoded to utilise only the QMA certificates installed via the above interface. It must not be possible to circumvent this without altering approved EMS software.

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.

### **SAA**

The SAA for monitoring systems monitoring and controlling gaming machines operating in Queensland clubs and hotels is OLGR.

The QMA will install the SAA in gaming machines monitored by LMOs.

EMS QCOM user scripts are considered to be part of the EMS and must be OLGR approved.

### **SUA**

The SUA for monitoring systems, monitoring and controlling gaming machines operating in Queensland clubs and hotels is OLGR.

The QMA will install the SUA in gaming machines monitored by LMOs.

Further requirements surrounding the remote upgrade of EGM software will be provided at a later date.

## **2.2.2 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) the same environment that is currently in operation with QCOM v1.6 EGMs.

## **2.2.3 QCOM user quarantine events**

The EMS must report all QCOM-user quarantine events to OLGR as soon as possible after each occurrence.

The EMS must immediately disable an EGM that quarantines a QCOM user whose role relates to EGM basic monitoring or other critical service. (This requirement may be removed in the long term if deemed unnecessary with respect to likelihood or risk. See below.)

QCOM-user quarantine for user's performing critical roles are expected to be rare as they are typically due to a software issue somewhere. They are not a normal occurrence and won't be tolerated by OLGR in approved software.

## 2.2.4 QCOM v1.6 EGMs

In Queensland clubs and hotels, QCOM v1.6 EGM monitoring must continue as per existing requirements. 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 being considered a minority (or sooner, if desired), additional discussions will take place around their demise. Note 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.

## 2.3 The gaming venue EGM LAN

The monitoring system must check the LAN responsiveness of EGMs that it monitors at least **once every 10 seconds**.

### 2.3.1 EGM LAN configuration

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 be 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 Queensland LMO's as to their preferred QCOM 3 LAN configurations. Submissions must consider the following:

- minimising installation and operating costs for the gaming venue & LMO
- having 1 gaming machine LAN per gaming venue
- QCOM 3's statement—'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)
- not making existing gaming machines obsolete before their time
- permitting existing machines to be upgraded to QCOM 3 where they are capable. Most Queensland machines have had ethernet ports for some time (a long standing QCOM v1 requirement). Out of these machines, it is not known 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 support IPv6, any 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<sup>ii</sup> is TBA.

Submissions should also cover:

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

---

<sup>ii</sup> Refer to the QCOM 3 SDK, autonomous example QCOM user called 'echo'.



## 2.3.2 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 existing gaming machine-related service providers currently in operation in Queensland clubs and hotels.

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

## 2.3.3 Encryption

QCOM 3-related EGM network protocols must be encrypted; however, the following exceptions are permitted:

- message authentication codes<sup>iii</sup> 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 or require authentication in that if the data was forged it would have no significant impact to the integrity or security of gaming
- NTP traffic.

## 2.3.4 Other services

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

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

## 2.4 Offline 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:

- 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)
- it can still open and close the gaming venue at the correct licensed gaming hours
- it is not RAM cleared. (2.12 also prevents individual EGMs that are RAM-cleared during the offline 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 offline mode before running out of memory (assuming the gaming venue's EGMs are otherwise operating normally).

---

<sup>iii</sup> en.wikipedia.org/wiki/Message\_authentication\_code

If a local host in offline mode detects it has **low** NV-RAM, the local host must automatically disable gaming and log an 'event log full' event (2.32.2.7). Gaming must be disabled before NVRAM is so low that any intervening or consequential events/data before or 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. (See also 2.32.2.7.)

## 2.5 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.

Hosts in a monitoring system must verify persistent storage integrity upon every restart.

Upon a non-recoverable error in a host in a monitoring system:

- 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 until they are successfully stored in the EMS central host. The EGM may be counted as a host for the purpose of this requirement.

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.

The EMS must perform sanity checks on all data it uses to make decisions or calculations.

## 2.6 Timekeeping

The current date and time must be maintained both accurately and securely throughout the EMS and EGMs.

Time accuracy must always be maintained to within **500 milliseconds** of Coordinated Universal Time (UTC).

Regarding security, OLGR will accept a reliable approach based on any of the following:

- 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 individuals.

All hosts in the EMS must attempt to contact at least 1 'upstream' time server/host at least once a day or after any restart.

Hosts in the EMS must log an event (2.32.2.4) if the time difference with respect to the central time server was greater than **5 seconds**.

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.

## 2.6.1 EMS host NV-RTC sanity check on power-up

All hosts in a monitoring system must perform a 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 (2.32.2.4) and contact the EMS central time server for an update before enabling other hosts or gaming.

## 2.6.2 Clock display

The EMS must keep the clock display ON (1) by utilising QCOM 3 API function *timeSetOSD()*.

## 2.7 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.

## 2.8 Local host RAM reset recovery policies

A local host must not interact with EGMs until after it has been completely initialised by the remote host with valid configuration data.

## 2.9 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.

## 2.10 EGM not responding

If the EGM does not respond to the peer EMS host for **10 seconds**, the EGM must be declared as not responding. An event must be logged (see 2.32.1.1).

## 2.11 EGM resumed responding

'Resumed responding' is with respect to the EGM resuming communications with a peer EMS host-monitoring system.

1. Before allowing play on an EGM, a host in the EMS must:
  - check important EGM configuration is still correct as applicable (related events: 2.32.1.16 and 2.32.1.17.)
  - ensure the QMA certificate in the EGM is one of the certificates installed in the EMS by the QMA
  - perform an EGM Content Audit (refer 2.29)\*
  - receive the EGM's latest EGM meters and outstanding events.
2. 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 (see 2.32.1), until ordered to try again by either the remote host system computer or if the EGM stops/ or resumes responding.

\*The host must only permanently record information from an EGM once an EGM content auditing has been successfully validated by the EMS.

The monitoring system must not request EGM meters during the period after an EGM resumes responding to an EMS host following a non-responsive period, until a EGM content audit has been successfully completed.

## 2.12 EGM factory reset

Upon detection of an EGM RAM clear, the monitoring system must immediately log a copy (see 2.32.1.3) of all last known raw meters for the EGM.

At EGM RAM clear the EMS must install the latest QMA certificate in the gaming machine (see 0) and execute their OLGR-supplied 'introductory script' in order to initially create any QCOM users the EMS requires to operate.

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.

If the EGM is a SAP and there have been no changes to the EGM's configuration after an EGM RAM clear, the EMS must automatically restore the last known SAP current contribution amounts for each game. The EMS must also have the ability to override this feature and restore alternative values as desired by the LMO. (Sometimes amounts are carried over from other EGMs.)

If the EMS cannot restore SAPs for any reason (e.g. different game; EGM is decommissioned), the EMS must log the 'SAP Contribution Discarded' event (see 2.32.1.14) for each SAP level with all the data.

## 2.13 EGM configuration

If a QCOM 3 EGM successfully passes a content audit (as per 2.29), the EMS may trust all hard-coded data<sup>iv</sup> provided to it by the EGM. Essentially, if a QCOM 3 EGM successfully passes a content audit against OLGR-provided content audit data for verification, the EMS may assume all hard-coded data provided to it by the EGM is what OLGR has approved. In other words, other than the content audit, an EMS is not required to meticulously cross-check individual hard-coded configuration data items with information OLGR provides.

The same rule may also be applied to QCOM v1.x EGMs in a QCOM 3-enabled EMS.

The EMS must always apply sanity checks to any data that if sent corrupted by the EGM (e.g. due to an EGM software bug) could adversely affect the integrity of the EMS.

## 2.14 EGM game configuration

The EMS must only enable games and game variations that have been approved for the particular jurisdiction the machine is in and meet all operating requirements such as min/max RTP, SD etc.

### Denomination hot-switching

Prior to any denomination hot-switch occurring, a text message\* must be displayed on the EGM by the SC for at least 1 minute before the switch. After the switch successfully occurs, the message must be replaced and another displayed until the next play commences.

\*SPAM A in the prominent position must be used for this and the message text to be used is listed in 2.23.

---

<sup>iv</sup> 'Hard-coded data' means data that if changed would also change the result of an EGM content audit result.

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.

### 2.14.1 Changing EGM game configuration

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.

Before OLGR will allow hot-switching of a game's variation, the monitoring system must first be capable of individually tracking all of a game's variations multi-game/variation meters.

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 note that an EGM won't perform the change if it was not in idle mode at the time. Game variation changes should be avoided 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.

Game variation change must not be performed while there may be a player in attendance.

## 2.15 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.

For Queensland clubs and hotels these parameters can be accessed as:

Parameter	Value	Scope in EMS <sup>v</sup>
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	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 ( <i>DUMAX</i> as per QCOM v1.6)	5	One per EGM

---

<sup>v</sup> 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, the reserve feature can be disabled in just those EGMs.

Double Up (Gamble) Limit ( <i>DULIMIT as per QCOM v1.6</i> )	\$10,000	One per EGM
PWRTIME ( <i>QPv1.6</i> )	Make 15 minutes the system default but may be changed at the gaming venues discretion	At least one per venue

## 2.16 External jackpot information (EXTJIP)

The monitoring system/host must automatically keep applicable EGMs up to date via this message with details of any external<sup>vi</sup> jackpot systems they are participating in. This typically includes jackpot name and associated current amounts. If a jackpot prize is designed to be hidden, 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 **as soon as possible** after any backward movement of a (non-hidden) prize amount. This information must also be refreshed on the EGM whenever an EGM resumes responding and before any new play is permitted on the EGM.

If the EMS elects to trigger external jackpots in the EGM via a QCOM user, a QCOM user must be dedicated to that role and must not perform any other functionality.

### Related:

- The applicable QCOM 3 API function here is `qcom_egmSMS()`
- OLGR Jackpot System Minimum Technical Requirements

## 2.17 Progressive jackpots

QCOM local area linked progressive jackpot support is mandatory.

All existing types of EGM linked jackpot systems must continue to be supported by Queensland LMOs. 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.

The OLGR document '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 covered by the JSMTR document.

### 2.17.1 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 offline, the EGMs on the jackpot must also be disabled. No jackpot contributions may be lost.

Monitoring systems must be able to support at a minimum, one LP group per EGM, with up to **8 levels** per group.

---

<sup>vi</sup> 'External' means any non-gaming machine triggered jackpots.

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.

The EMS must support multiple LP jackpot triggers per play from an EGM game. However, unlike QCOM v1.6 EGMs that would send jackpot hit event to the system one at a 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.**

The EMS must ensure that before any QCOM LP EGMs are enabled for play, all progressive groups and levels for the EGM are fully setup and that the jackpot system totaliser is online.

QCOM LPs must be only configurable in the EMS host system computer by authorised personnel and from OLGR-approved LP variations.

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.

Upon deleting a QCOM LP jackpot the current jackpot contribution the current liability/amount owing must not be discarded. The current contribution must be added to another LP or SAP jackpot in the first instance, or where this is not possible, refer to the JSMTR for additional options and information.

All meters must be at least **64 bits** or larger (either floats or integers).

QCOM LP jackpot systems must be able to handle jackpots with percentage increments from zero to 100% to at least **4 decimal places**. (Note: This is as per QCOM v1.6.)

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)—that is, a fixed prize.

## 2.17.2 Configuration

All progressive configurations used must be approved by OLGR. A progressive configuration change will be allowed under the same rules as per a variation change (refer to 2.14.1).

Systems should make no assumptions about jackpot parameters other than:

- 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:

- a jackpot level TRTP is a constant
- that it will be possible to calculate a level's RTP without additional information (i.e. a specific formula) from the game designer.

## 2.17.3 Linked progressive current amounts and broadcasts

The monitoring system/host must automatically keep applicable EGMs up with current amounts of any linked jackpot systems their games are participating in. The frequency must be at least **once per minute** or **as soon as possible** after any backward movement of any applicable prize amount (e.g. a prize hit). This information must also be refreshed on the

EGM whenever an EGM resumes responding and before any new play is permitted on the EGM. Refer to QCOM API function *lpPrizeSet()*.

For other LP requirements, refer to the JSMTR documents.

#### **2.17.4 Sharing of QCOM-linked progressive jackpots**

These requirements as all as per QCOM v1.6 operating requirements.

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 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 Queensland legislation (as opposed to paying all simultaneous winners in full). However, it is OLGR policy for all jackpot prizes won that are paid by ECT to be paid in full, even if the prize was a part of a simultaneous jackpot win event.

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. If a large jackpot was to be shared, it can be done via a manual adjustment.

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.

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 start up amount must be paid in full to all eligible winners. 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 then shared equally among the eligible winning players.

The operator must give clear notification and details to the player and venue staff if a LP jackpot is to be shared.

Automating sharing of jackpots in the system is not recommended 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.

#### **2.17.5 Advanced linked progressive prize support**

Refer to QCOM 3 chapter titled 'Advanced Linked Progressive Prize Support', which is currently published as a concept only.

Once the requirements are finalised in consultation with Queensland LMOs, it is proposed that Queensland club- and hotel-based monitoring systems be required to support the *VM Solution*. (VM as in a jailed scripting environment similar to the QCOM Lua Engine.)



## 2.18 System lockup

The QCOM 3 API function *s/Request()* may be used at the host's discretion, for example to award prizes from external jackpot systems.

Certain operations in QCOM 3, for example, credit redemption, require the use of system lockups.

## 2.19 Banknote validators

The EMS must ensure that only the following banknote denominations may be accepted by Queensland gaming machines (effective since **6 Dec 2013**):

- \$5
- \$10
- \$20
- \$50
- \$100.

The EMS must be able to quickly disable specific note denominations on demand (e.g. at the venues request, or to eliminate a problem with a specific note denomination until the note acceptor is upgraded).

A set of these note-acceptor parameters must be stored for each EGM in the monitoring system.

The host must also support firmware upgrades for banknote acceptors via the *bnafirmwareUpgrade()* QCOM 3 API function.

The host must limit the maximum Cash Ticket In value by utilising the *bnarejectTicket()* QCOM 3 API function. 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 EGMs.

## 2.20 Coin validators

For Queensland EGMs with coin validators, the EGM coin denomination must be set to \$1 by the EMS.

The host must support firmware upgrades of coin validators via the *cafirmwareUpgrade()* QCOM 3 API function.

## 2.21 Coin hoppers

OLGR mandates a default refill (*hopperSetDefaultRefillAmount()*) of 160 coins for \$1 token EGMs.

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.

## 2.22 Ticket printers

The EMS host must support firmware upgrades for ticket printers utilising the QCOM 3 API function *tpfirmwareUpgrade()*.

## 2.23 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 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. Contact 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

<i>Message</i>	<i>Duration</i>
'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 to 2.7)
'QCOM: LOCAL HOST LOW MEMORY'	Refer to 2.4
'QCOM: DENOMINATION CHANGING SOON'	Refer to 2.14
'QCOM: DENOMINATION CHANGED TO \$x.xx'	Refer to 2.14 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.

2. 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.

- It is recommended that EMS should not send SPAM to a single EGM any more frequently than once every **30 seconds**, unless it is considered a high priority. 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.

## 2.24 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).

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. Consideration should also be given to handling 24-hour trading and special events.

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 should be able to handle either gaming venue specific or global changes to licensed gaming hours.

A gaming venue EMS local host must be able to store several days' worth of gaming licence hours. Refer to 2.4.

The *playDisable* must also be used to disable the EGMs after any EMS local host processor door access, or event log full etc.

## 2.25 General promotional message

Also known as 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:

Message	Period
LOCAL HOST QUEUE FULL	During any EMS local host event or meter log full condition, if applicable (2.32.2.7).
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 and LOCAL HOST program hash failure, host timeout, hash failure etc.). This message should be substituted or supplemented with a more verbose explanation for the reason for the disable.

The EMS must erase a message once it is no longer applicable.

## 2.26 Credit redemption

As per the existing gaming machine regulatory operating environment for Queensland clubs and hotels, Queensland 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). In Queensland clubs and hotels, OLGR is happy to be the CRM unless an LMO prefers otherwise. If the CRM is OLGR, this function will be performed via a QCOM autonomous user installed by the QMA. In both cases, the parameters the CRM requires will be in the control of the LMO and will be similar to those in QCOM v1.6 (i.e. **MAXECT**, **COLLIM** and **TICKET**).

OLGR will release a proposed CRM source script to Queensland LMOs for comment in the near future.

## 2.27 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).

Any local created gaming venue ECT Meters must be sent to the central EMS host once per day and every new remote host-local host session upon connection. ECT Meters must be time stamped to identify how recent they are in the system.

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.

### 2.27.1 ECT to EGM

Every attempt at an ECT must have an 'EMS-EGM ECT to EGM' Event logged (2.32.1.9) with full details also covering the type of ECT taking place (e.g. if the ECT is associated with an account, an event must be logged in the system for the ECT, which includes a public account identifier. However, do not put private or sensitive information into these events.

Any failure of an attempted ECT to EGM must have an 'EMS-EGM ECT to EGM Timeout' event logged. Refer to 2.32.1.10.

The EMS must ensure that it never attempts an ECT that is greater than the MAXECT threshold set on the EGM.

## 2.28 TITO

Refer to the QCOM v1 Protocol document for a section with notes concerning AUTHNO generation.

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.

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. Finding a ticket in the TITO system must be possible by either a manually entered AUTHNO<sup>vii</sup>, or EGM ID, or ticket serial number (TSER)<sup>viii</sup>. (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. 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. 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 where by a transaction or cash amount can be lost, duplicated, stolen, deleted before its time, or its state be incorrectly recorded. 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.

### 2.28.1 Ticket out

There must be a negligible chance of the system causing a double-payout scenario (e.g. the player receives a manual payment but then the EGM subsequently is ordered to produce a cash ticket for the credit redemption transaction), or a walk-away, or a belated payment to a vacant EGM or the wrong player. Any deviation by an EGM from expected behaviour from the system's point of view must be logged as events to help with diagnosis.

### 2.28.2 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.

## 2.29 EGM content auditing

The EMS must ensure EGM reported hashes are correct with respect to the approved hashes list supplied by OLGR. (This excludes *peripheral content*.)

The EMS must perform an EGM content audit at the following times:

- after the EGM resumes responding to the EMS after any continuous non-responsive period that **exceeds 60 seconds** in duration
- after any EMS local host power-up or restart
- 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)
- once per day (which must be outside of licensed gaming hours—if the gaming venue is licensed 24 hours a day, the content audit must be conducted during off peak hours).

---

<sup>vii</sup> Note that the AUTHO of unclaimed tickets must be kept a secret within the TITO system and not accessible by anyone.

<sup>viii</sup> 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.

The EGM must be play-disabled during an EGM content audit conducted under points 1 and 2.

The EMS must use a different seed each day, 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.

If an unapproved hash for any content is detected, then an event must be logged (2.32.1.4) and the EGM must be disabled until a successful content audit is made. This also requires an event. Refer to 2.32.1.5.

All incidences of invalid program hashes from EGMs must be investigated by the LMO as to the cause.

There must be no facility in the monitoring system or host to override or disable EGM content auditing.

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 (2.32.1.6) and take no other action.

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<sup>ix</sup> and must be enforced by the LMO.

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. These reports must be able to aid in keeping things like coin/banknote validation set firmware all up to date.

## 2.30 Meters

The EMS must monitor (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. Refer to 2.32.1.3 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.

The monitoring system must be ready to log and record a set of raw EGM meters whenever an EGM stops responding.

The EMS must monitor (sanity check) and keep a copy of raw EGM meters an EGM produces. The EMS must log raw EGM meters as events at the following times:

- 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

The EMS must use this raw EGM meter data as the basis to produce and log all cumulative and period meters in the EMS.

---

<sup>ix</sup> Refer Queensland [Gaming Machine Regulation 2002](#)

Anytime an EGM meter changes, a copy must be made on another host in the EMS within **10 seconds**. If unable to do so for a period of **10 seconds**, new game play on the EGM must be disabled.

### 2.30.1 EGM meter increment sanity checks

The EMS must perform sanity checks on all EGM meter increments as they are received.

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.

The EMS should adjust the thresholds listed below to suit their individual operating environments (time between the frequencies of meter transfers).

For any meter failing an increment sanity check, the EMS must log an 'Unreasonable meter increment' event with details (refer to 2.32.1.18). 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.

<b>Valid increment threshold in the following time period (QLD clubs and hotels)</b>					
<b>MeterID</b>	<b>Description</b>	<b>0 secs<sup>#</sup></b>	<b>10 secs</b>	<b>24 hours</b>	<b>Notes</b>
Stroke	Games Played	1	30	TBA	
turnover	Turnover	MAXBET	\$500	TBA	
Wins	Total Wins	\$40,000	\$40,000	TBA	Typical. May be set higher as required to handle an approved game's Maximum Non-Progressive Win.
cancelcredit	Cancel Credits	As above	As above	TBA	As above.
gameswon	Games Won	1	30	TBA	
Ectin	Cashless In	See note right	See note right	TBA	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	TBA	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	TBA	
gamblewin	Gamble Win	\$11,000	\$11,000	TBA	
lpwins	Link	See note	See note	TBA	Each host that can

	Progressive Wins	right	right		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.
Ticketin	Ticket In	Only reasonable when expected	Only reasonable when expected	TBA	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	TBA	
ticketout	Ticket Out	See right	See right	TBA	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	TBA	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	TBA	
cashbox	Cash Box	20	40	TBA	
Refills	Refill	200	200	TBA	
coinsout	Coins Out	20	40	TBA	
overpay	Extra Coin Out	20	40	TBA	
Notesin	Banknotes In	1	5	TBA	



notesincount	Banknote Count	1	5	TBA	
notesrej	Banknote Rejects	1	5	TBA	

#The increment sanity check is performed by a script in the EGM.

### 2.30.2 EGM linked progressive contribution meters

The EMS must conduct an increment sanity check on all progressive contribution amounts equivalent to the EGM turnover meter. 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. Refer to 2.32.1.19.

## 2.31 EGM events

The EMS must collate and store all received QCOM 3 defined EGM generated events in the EMS central host.

EGM events received by the EMS must be stored in at least two distinct storage locations in the EMS at all times; ultimately at least one of which must be at a controlled central site or sites.

If an event storage device in the EMS is replaced then the EMS must automatically populate the replacement device with a copy of the data that should have been on the storage device prior being replaced.

Unless stated otherwise for a particular event type (TBA), the host system must store all events received from an EGM (for **5 years** minimum\*).

The EMS must apply the sanity checks to all event data whenever possible and log error events if any issues are found. 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).

## 2.32 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.

All events must be logged with sufficient data pertaining to the event being logged. Refer QCOM v1.6 for examples. Until this information is added, event data logged must be approved by OLGR.

### 2.32.1 EMS generated events concerning EGMs

The following events must be generated by the EMS. Event codes may be assigned at the operator's discretion.

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

---

\* Refer OLGR Monitoring System Minimum Technical Requirements current version.

Events must be logged as defined by the document and not be bundled in with other EMS events.

All EMS generated events must:

- be timestamped with gaming venue local time upon creation
- 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 AUTHOs or jackpot trigger values), 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, the EMS must do so.

#### **2.32.1.1 'EMS-EGM Stopped Responding'**

Logged when an EMS host detected the EGM has stopped responding for a timeout period. Refer to 2.10.

#### **2.32.1.2 'EMS-EGM Resumed Responding'**

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

Related: 2.11.

#### **2.32.1.3 'EMS-EGM Raw Meters'**

This event must contains the EGM raw meters at the time the event was generated. Refer to 2.12, 2.30 and 2.30.

#### **2.32.1.4 'EMS-EGM Content Audit Fail'**

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

Refer to 2.29.

#### **2.32.1.5 'EMS-EGM Content Audit OK'**

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 to 2.29.

#### **2.32.1.6 'EMS-EGM Common Content Changed'**

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

Refer to 2.29.

#### **2.32.1.7 'EMS -EGM RAM Clear Detected'**

Logged whenever the EMS detects an EGM has been RAM cleared. Refer to 2.12.

#### **2.32.1.8 'EMS-EGM Meters Logged'**

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

### **2.32.1.9 'EMS-EGM ECT to EGM'**

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 to 2.27.1.

### **2.32.1.10 'EMS-EGM ECT to EGM Timeout'**

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

### **2.32.1.11 'EMS-EGM Play Outside Licensed Hours'**

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

### **2.32.1.12 'EMS-EGM Disabled By System'**

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 that identifies the reason for the disable or have the reason embedded. This event is not applicable for incidences that disable an entire gaming venue.

### **2.32.1.13 'EMS-EGM Enabled By System'**

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

### **2.32.1.14 'EMS-EGM SAP Contribution Discarded'**

Refer to 2.12.

### **2.32.1.15 'EMS-EGM SAP Game Initial Contribution'**

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

### **2.32.1.16 'EMS-EGM Unexpected EGM Serial Number'**

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

### **2.32.1.17 'EMS-EGM Incorrect EGM Configuration'**

Refer to 2.11.

### **2.32.1.18 'EMS-EGM Unreasonable Meter Increment'**

This concerns the monitoring of raw EGM meters. Refer to 2.30.1.

### **2.32.1.19 'EMS-EGM Unreasonable LP Contribution'**

Refer to 2.30.2

## **2.32.2 Events generated by local hosts**

Not all EMS have gaming venue local hosts—if it does, 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:

- a local host uid (may be appended by the next host up if desired)
- a local host event serial number.

#### **2.32.2.1 'Processor Door Opened'**

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

#### **2.32.2.2 'Processor Door Closed'**

#### **2.32.2.3 'Power Off Processor Door Access'**

#### **2.32.2.4 'RTC Refreshed'**

Refer to 2.6.1.

#### **2.32.2.5 'Power Down'**

#### **2.32.2.6 'Power Up'**

#### **2.32.2.7 'Event Log Full'**

Refer to 2.4.

Events Generated by EMS

#### **2.32.2.8 'Gaming Venue Opened'**

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

#### **2.32.2.9 'Gaming Venue Closed'**

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

### 3 Revision history

Version	Who	Release date	Incept date	
1.0 draft 1 (initial)	JA/RL	16 Mar 2016 (via email)	TBA	
1.0 draft 2	RL	20 May 2016 (via email)	TBA	
<ul style="list-style-type: none"> <li>• Changes as a result of feedback to the first draft. See change marked text throughout document for more information.</li> <li>• Some section titles were repeated (directly related but different text). Merged those duplicate sections.</li> <li>• Reviewed section content auditing (2.29).</li> <li>• Clarified LP broadcasts. Refer to 2.17.3.</li> <li>• Calling for LMO submissions in relation to the QCOM 3 LAN configuration. Refer to 2.3.</li> <li>• Ported over applicable requirements from QCOM v1.6 SC procedures pertaining to LP support.</li> <li>• Added section concerning advanced LP support (2.17.5).</li> <li>• Added section on Credit Redemption (2.26).</li> <li>• Added section on EGM configuration (2.13).</li> </ul>				
1.0	See below	RL	1 Jul 2016	TBA
<ul style="list-style-type: none"> <li>• Fixed some issues with paragraph numbering resetting in various sections.</li> <li>• NTP traffic does not require encryption (2.3.3).</li> <li>• External jackpots triggered in-machine must use a dedicated QCOM user (2.16).</li> </ul>				
1.0.1	See below	RL	10 Nov 2016	TBA
<ul style="list-style-type: none"> <li>• Updated to new DJAG template</li> <li>• Updated the copyright notice to match the primary QCOM 3 document's copyright statement.</li> </ul>				
1.0.2	See below	RL	1 May 2020	TBA
<ul style="list-style-type: none"> <li>• Updated to new DJAG template and minor editorial changes</li> <li>• No changes to requirements</li> </ul>				