EPAM Cloud Orchestration

EPAM CLOUD Support

May 2012

ECPG-1

Content

1. Introduction

1.1. EPAM CLOUD Support Structure Overview

EPAM cloud support service is built as shared, scalable teams (pools of specialists) supporting multiple clients. Cloud support services have following structure (support levels):

– Level 1 Support – Help Desk/Service Desk service
– Level 1+ Support – Monitoring Support service
– Level 2 Support – System, Network, Storage and Application support
– Level 3 Support – Application development support

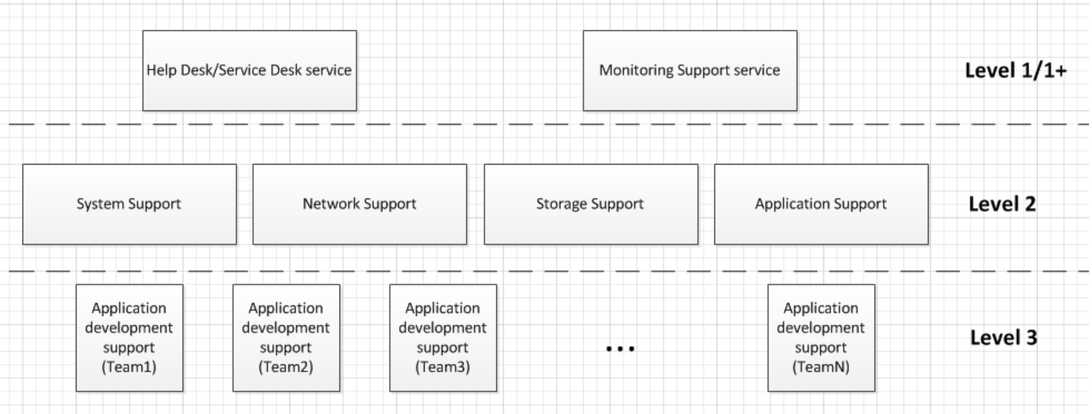

Figure 1 *- EPAM CLOUD Support Structure*

1.2. Support Responsibilities Overview

EPAM Cloud Support provides full 24x7x365 support service of Clients' requests including:

- Initial requests' processing (via e-mails, phone calls, web-based requests)
- Requests' lifecycle management (incidents, requests for change, etc.) including:
  - ✓ Requests' efficient resolution via escalation workflow
  - ✓ Clients' update with all major points of request lifecycle
  - ✓ Resolution\Implementation of Clients' and internal requests
  - ✓ Other actions and activities with goal to provide the Client with service of high quality

1.3. High-level Functional Escalation Workflow (Incident)

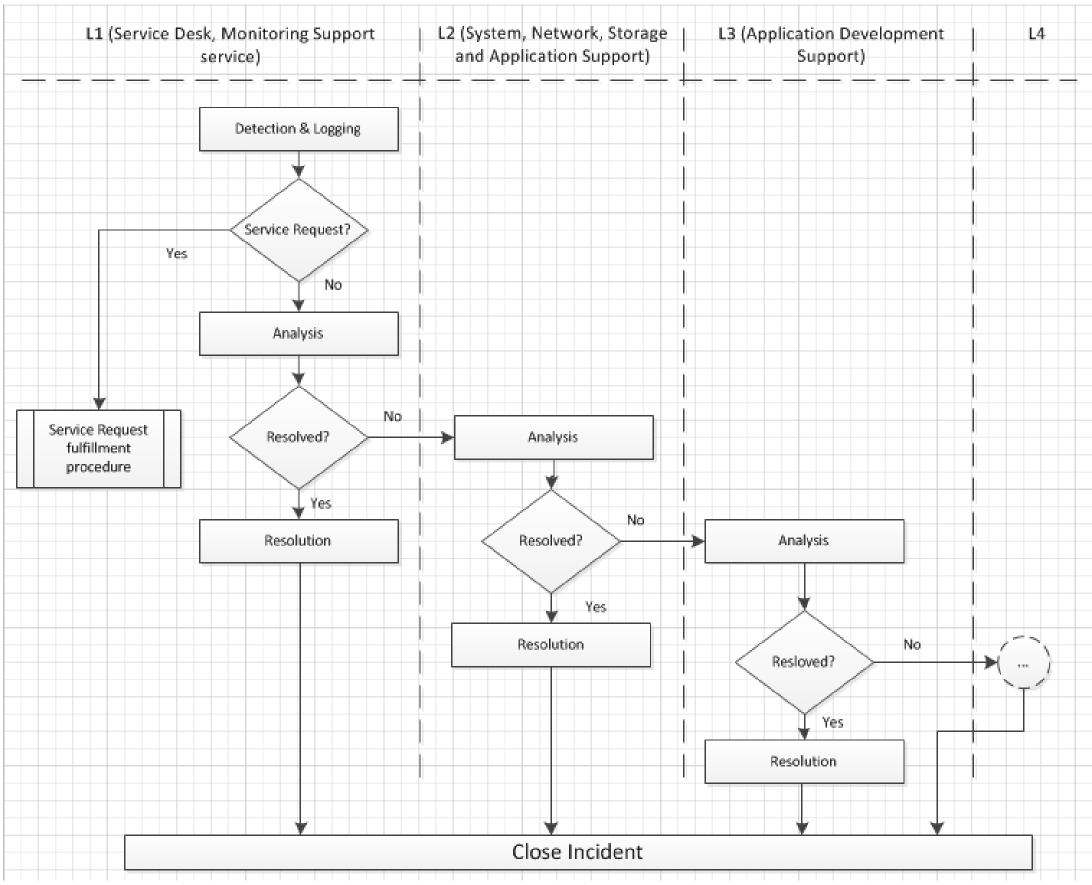

Figure 2 *- High-level Functional Escalation Workflow (Incident)*

2. Service Desk Team (Level 1)

2.1. Service Desk Team Responsibilities and Work Schedule

Service Desk is the Single Point of Contact between the Service provider (EPAM Systems) and the Users. The team manages Incidents and Service requests at every stage of the lifecycle (from opened to resolved). This includes registering requests, defining their attributes, informing assignees of high priority requests, routing requests to responsible services. Service Desk also handles communication with the users providing prompt information on incidents/service requests' status.

Service Desk work schedule is based on 24\7\365 coverage with shifts defined by Service Manager.

2.2. Service Desk Working Tools

Service Desk specialists use Hard Phones, Messengers (Skype, etc.), MS Outlook for communication with Clients and internal communication. For issues (Incidents, RFC, etc.) management\tracking, internal and external reporting – HPSM and MS Outlook. The team uses Internet browsers for HPSM usage and issues reproducing as well as other working tools that allow improving service quality.

2.3. SD Issues Management Process

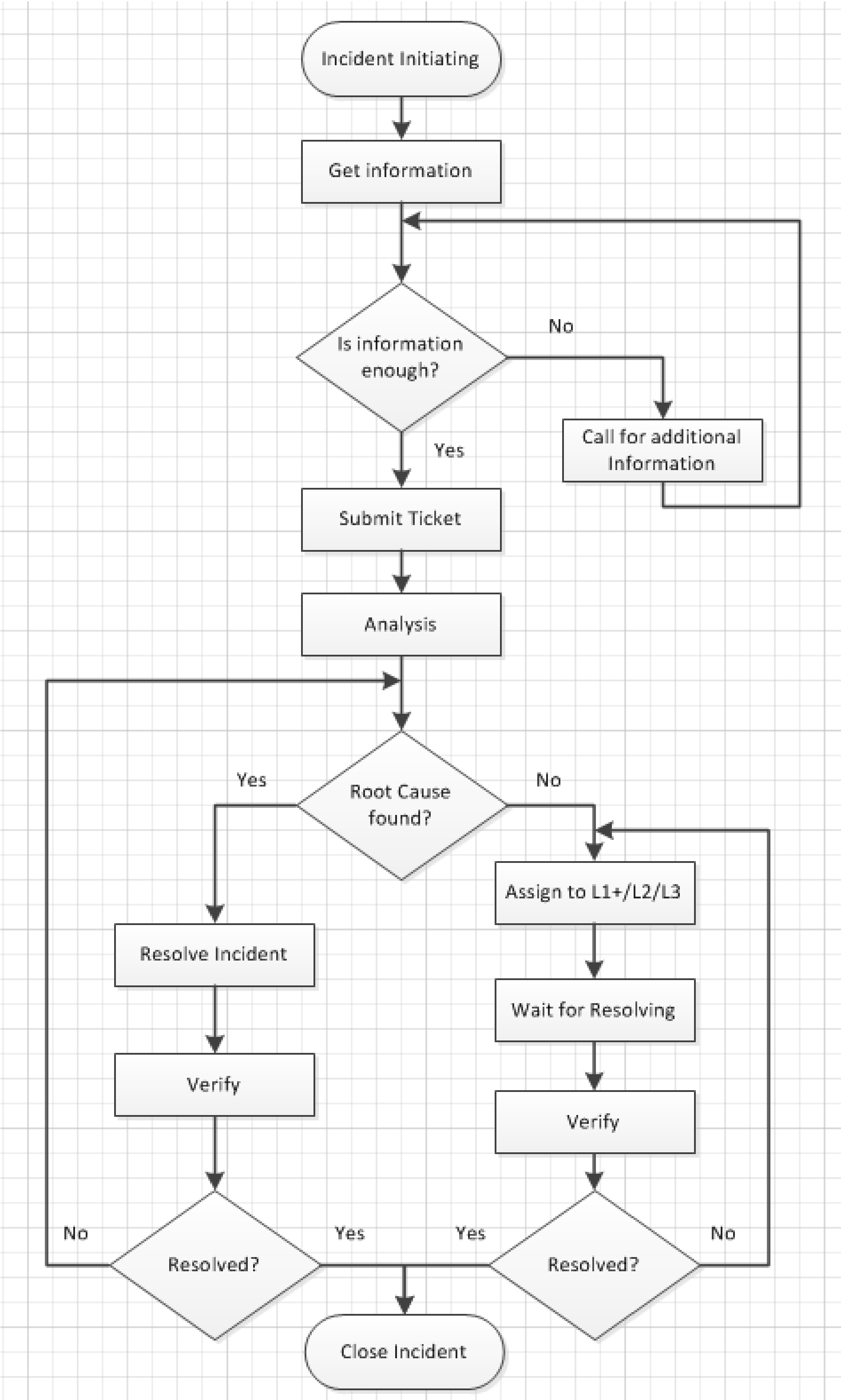

Figure 3 *- High-Level Incident Management Procedure (Service Desk)*

2.3.1. Incident Management Process Description (Service Desk)

Incident Initiating

Incidents could be initiated by the Clients (via phone call, e-mail, web), Monitoring Team (via alerts from monitoring tools), Other IT-Staff (Level 1-3 support, etc.) All these ways mean initial request to Service Desk team.

Get Information

When request received from the Client or internal stuff, Service Desk specialist should get all the mandatory information about the incident: summary, description, urgency and impact (or severity), steps to reproduce it. The data about the Client and contact point(s) should also be obtained to submit a ticket.

Submit Ticket

After collecting all the necessary information Service Desk specialist must immediately submit incident into incident management tool (HPSM) with default assignment to submitter.

NOTE: before incident submitting SD specialist should check if the same incident is already opened. If it is, that incident should be updated with new information or new incident should be added and linked to existing.

Analysis

SD specialist should make the best effort to resolve incident immediately without escalating to the next level (with help of common knowledge or information from Knowledge Base). If "root cause" is found and incident is resolved, SD specialist should call to the Client and verify resolution. If issue is not verified, SD specialist should do it once more or assign incident to other support levels. If the Client confirms incident resolution it should be closed in HPSM and information about resolution method should be added to Knowledge Base.

Escalation to L1+/L2/L3

If there's no solution at the investigation stage SD specialist must escalate incident to L1+\L2\L3 support levels. Incident assignment should be based on incident categorization and prioritization made by SD specialist. Corresponding timeframes for the incident resolution must be set by SD specialist (or set automatically by HPSM) based on corresponding SLA with the Client.

Incident Tracking

SD Specialist is an "Incident Owner" and should track incident lifecycle through the whole workflow. After incident resolution by L1+\L2\L3 level specialist, incident assignment returns to submitter with resolution details. "Incident Owner" is responsible for timely escalation of incident depending on SLA level.

Incident Resolution Verification

If incident resolved, SD specialist should call to the Client and verify resolution. If the Client does not confirm resolution of the issue, SD specialist should re-assign incident to responsible person. If the Client confirms incident resolution it should be closed in HPSM and information about issue resolution should be added to Knowledge Base.

3. Monitoring Support Team (Level 1+)

3.1. MST Responsibilities and Work Schedule

Technical specialists are monitoring health of the Cloud Infrastructure as well as Client Applications and Services. Using monitoring tools (Zabbix, etc.) they are able to identify most of the problems by looking at the screen or receiving real time alerts. Technical specialists must conduct preliminary investigation on the issue and resolve problems when they can. They must escalate more complex problems to L2/L3 support along with results of preliminary investigation.

Monitoring Operations Support is available 24/7/365 for internal communications only. They are not exposed to the Clients (certain exceptions might be applied). Work schedule is based on 12h shifts with permanently two specialists on-site. Monitoring Team Service Manager is responsible for continuous monitoring activity and work schedule management.

3.2. MST Working Tools

Primary MST tool for Cloud Infrastructure monitoring is Zabbix. For internal communication MST uses Messengers (Skype, etc.) and MS Outlook (in exceptional cases for communication with Clients). For issues (Incidents, RFC, etc.) management\tracking, internal and external reporting – HPSM and MS Outlook. The team uses Internet browsers for issues reproducing, HPSM and Zabbix usage as well as some other working tools that allow improving monitoring service quality.

3.3. MST Issues Management Process

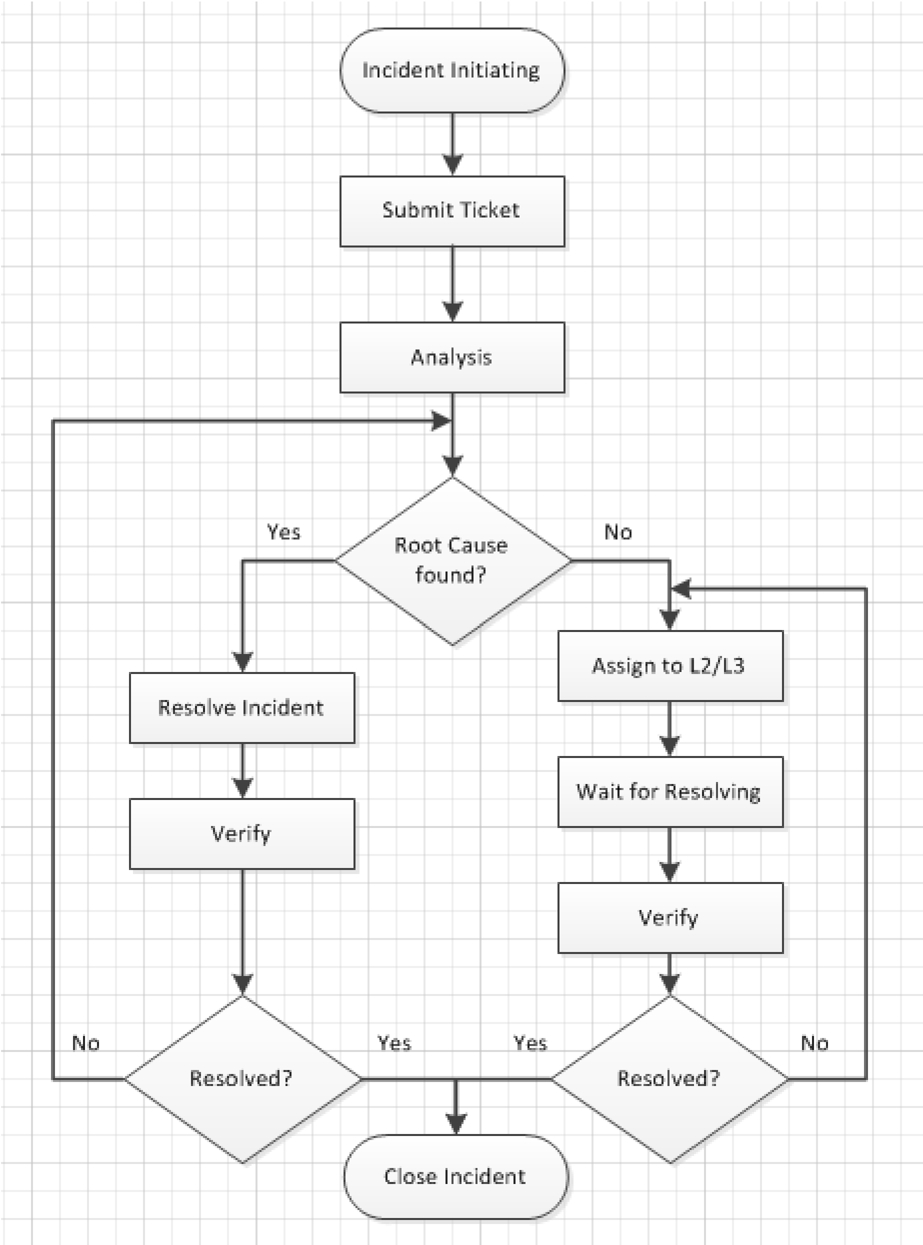

Figure 4 *- High-Level Incident Management Procedure (Level 1+Support)*

3.3.1. Incident Management Process (Level 1+ Support)

Incident Initiating

Incidents could be initiated by Level 1+ Support by: e-mail/SMS alerts from monitoring tools (Zabbix, etc.), "live" detection via monitoring tools, information from other IT-Staff (Level 2-3 support, etc.)

Submit Ticket

Level 1+ Support specialists must immediately submit incident into incident management tool (HPSM) with default assignment to submitter.

NOTE: before submitting incident, Level 1+ Support specialist should check if the same incident is already opened. If it is, that incident should be updated with new information or new incident should be added and linked to existing.

Analysis

MST specialists should make the best effort to resolve incident immediately without escalating to the next level (with help of common knowledge or information from Knowledge Base). If incident could be resolved, MST specialist should resolve an issue and verify resolution. If issue is still not resolved, specialist should make another attempt to resolve it or assign incident to another support group. If incident is resolved it should be closed in HPSM and information about resolution should be added to Knowledge Base.

Escalation to L2\L3

If there's no solution at "Analysis" stage within 30 minutes MST specialist must escalate incident to L2\L3 support levels. Incident assignment should be based on incident categorization and prioritization made by MST specialist.

Incident Tracking

Service Desk specialist should track incident lifecycle though the whole workflow. After incident resolution by L2\L3 level specialist, incident assignment returns to submitter with resolution details.

Incident Resolution Verification

If issue resolution is not confirmed by the client, MST specialist should re-assign incident to responsible person. If incident is resolved it should be closed in HPSM and information about resolving method should be added to Knowledge Base.

4. Cloud Infrastructure and Application Support Team (Level 2)

4.1. Level 2 Responsibilities and Work Schedule

Level 2 support team is responsible for Cloud Infrastructure support as well as Client Application specific infrastructure and services. They will receive escalation either from Help Desk or Monitoring Operations Support. In case when they would not be able to resolve an issue themselves they will escalate this issue to Level 3 support team.

Level 2 team is available on call and depending on Priority of the issue, must be contacted immediately (Severity 1 and 2) or in business hours (Severity 3).

4.2. Level 2 Issues Management Process

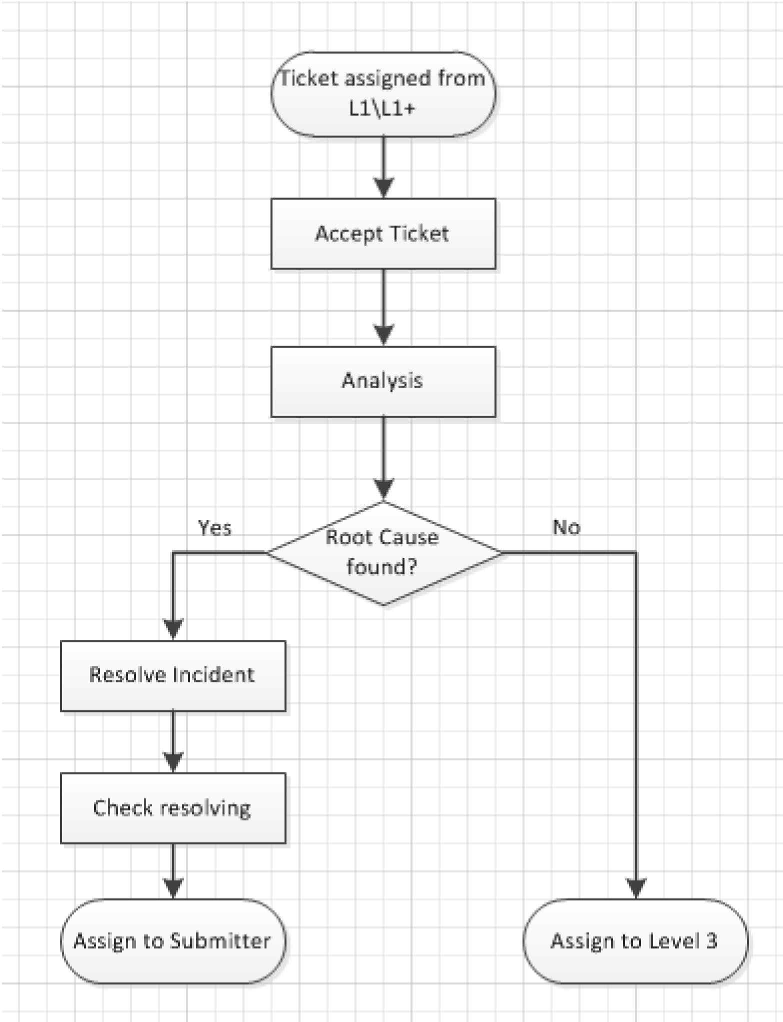

Figure 5 *- High-Level Incident Management Procedure (Level 2 Support)*

4.2.1. Incident Management Process (Level 2 Support)

Ticket Accepting

As soon as any incident was assigned from L1\L1+ to Level 2 Specialist, it should be accepted for further activities

Analysis

L2 specialist should make the best effort to resolve incident as soon as possible without escalating to the next level (with help of common knowledge or information from Knowledge Base). If incident could be resolved, L2 specialist should resolve the issue, confirm resolution and assign it back to the submitter. Resolution details must be added to ticket and to the KB. If L2 specialist cannot resolve the issue, it has to be assigned to Level 3 Support.

Incident Resolution

After accepting the ticket L2 specialist should make the best effort to estimate issue resolution time and update ticket in HPSM with this information so that SD specialist who owns the ticket will be able immediately update the client. After the ticket resolution, L2 specialist must verify it and assign the ticket back to the submitter. Resolution details must be added to the ticket and to the KB.

Escalation to Level 3

In case if analysis shows that incident can't be resolved by L2 specialist incident must be escalated to corresponding L3 support team. Results of L2 analysis must be added to the ticket by L2 technician. L2 specialist should assist L3 if some additional information requested.

5. Application Development Support Teams (Level 3)

5.1. ADST Responsibilities and Work Schedule

Level 3 support team(s) is responsible for all aspects of Client Application support and maintenance. They will receive escalations mostly from Level 2 support team but in rare cases directly from Help Desk or Monitoring Support team. Level 3 is the last (highest) level of escalation for Client Application specific technical problems. Besides responsibilities of resolving incidents (including bug fixes) they will be responsible for minor application's enhancements.

Level 3 teams is available on call and depending on Priority of the issue, they must be contacted immediately (Priority 1 and 2) or in business hours (Priority 3).

5.2. ADST Issues Management Process

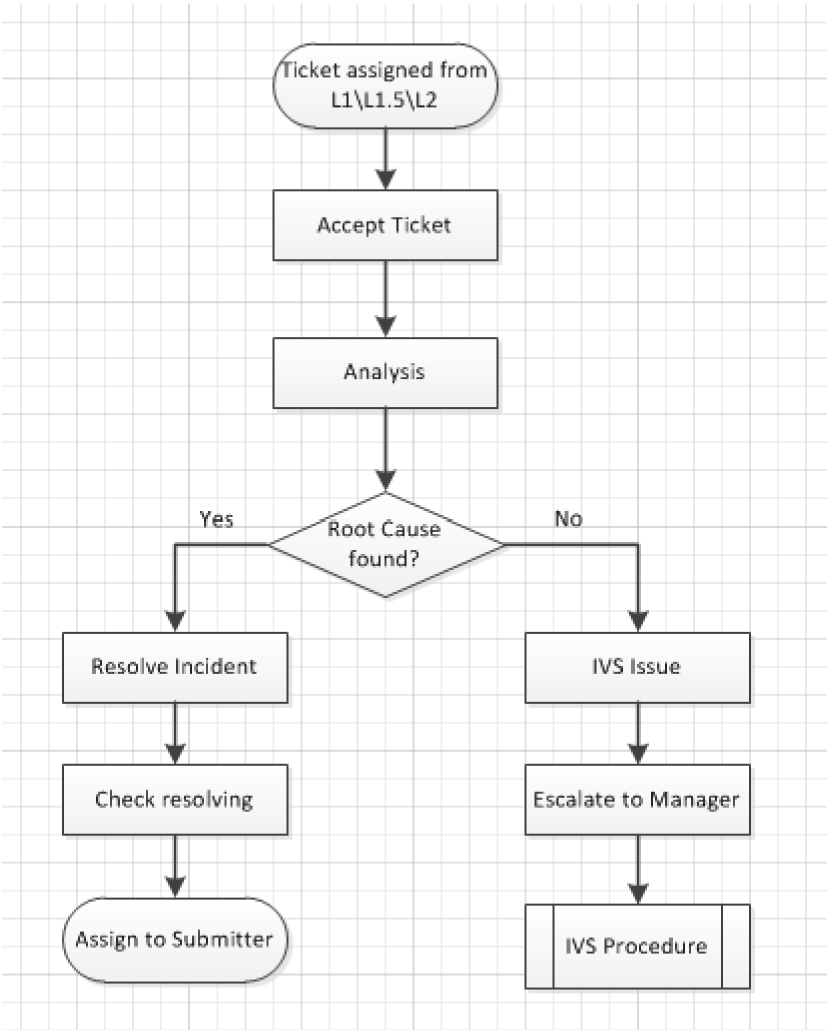

Figure 6 *- High-Level Incident Management Procedure (Level 3 Support)*

5.2.1. Incident Management Process (Level 3 Support)

Ticket Accepting

As soon as any incident was assigned from L1\L1+\L2 to Level 3 Specialist, it should be accepted for further activities

Analysis

L3 specialist should make the best effort to resolve incident as soon as possible (with help of common knowledge or information from Knowledge Base). If incident could be resolved, L3 specialist should resolve the issue, confirm resolution and assign it back to the submitter. Resolution details must be added to ticket and to the KB. If issue (Severity 1and Severity 2) cannot be fixed quickly work around needs to be found to restore normal service and real fix has to be planned as a longer term development effort.

If the problem lays outside of L1/L2/L3 support but with one of the external vendors (storage, network, virtualization, etc.), incident has to be assigned to Independent Vendor Support. If IVS is needed ticket must be assigned to responsible person (vendor manager) with detailed problem description.

Incident Resolution

After accepting the ticket L3 specialist should make the best effort to estimate issue resolution time and update ticket in HPSM with this information so that SD specialist who owns the ticket will be able immediately update the client.. After the ticket resolution, L3 specialist must verify it and assign ticket back to the submitter. Resolution details must be added to the ticket and to the KB.

6. Client Updates

Each major phase of Client's request should be accompanied by the Client update (notification about request status and additional important information).
These notifications should be sent automatically via request tracking tool or by Service Desk specialists (if tool cannot be used).

6.1. Client Update with Incident Workflow

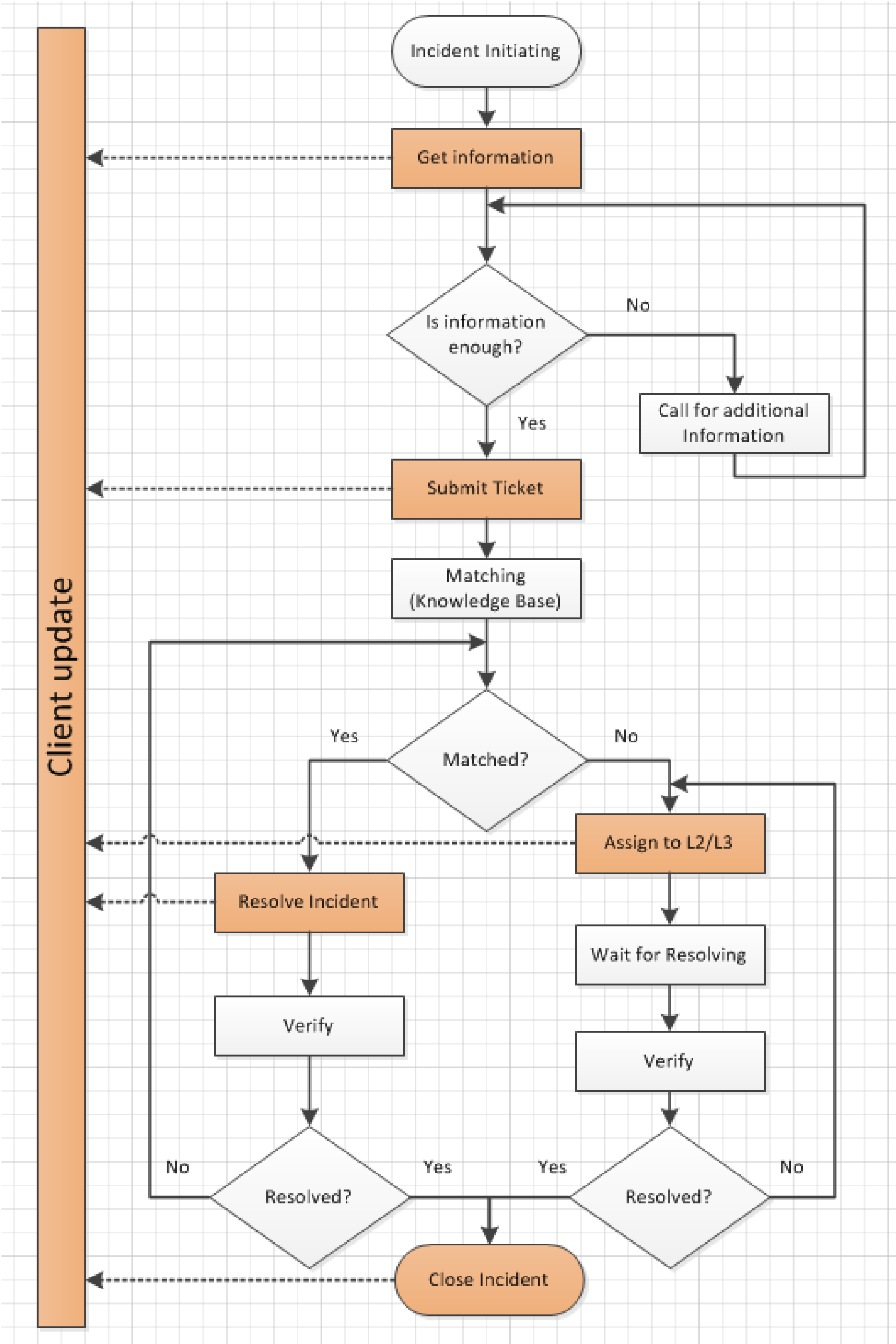

Figure 7 *- Client Update with Incident Workflow*

6.1.1. Client Update Procedure (Incidents)

Get Information

This case implies that the Client's request was received via web-portal or an e-mail. In this case Service Desk specialist should connect with the Client to inform that request was received and to ask the Client for additional information (if it's need).

Ticket Accepting

After the incident submission into the incident management system (HPSM) the Client should receive auto-notification via e-mail that provides initial information like ticket ID, ticket details, etc.

Assignments to L2\L3

By incident assignment to L2\L3 the Client should receive auto-notification via e-mail that provides information about Client's request escalation to the next support levels.

Incident Resolving

When Incident gets status "Resolved" in incident management system (HPSM) the Client should receive auto-notification via e-mail that provides information about it. E-mail also asks the Client to contact Service Desk to confirm issue resolution.

Incident Closure

By receiving incident resolution verification from the Client, Service Desk Specialist should set incident status to "Closed". Corresponding auto-notification via e-mail should be sent to the Client to inform him about incident closure.

If the Client doesn't answer on "Incident Resolution" letter in the course of established number of business days (see 'Incident Resolving'), Service Desk specialist should contact the Client and ask him to confirm issue resolution. If it's so, incident status should be set as "Closed" and auto-notification via e-mail should be sent to the Client to inform him about incident closure.

Additional Notifications

Client also should receive additional notifications that could be defined in SLAs like time-frames updates, escalation updates, etc.

Table of Figures

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