Competitive Analysis

Hardware Service Call Escalation: Best-in-Class Models

Abstract: *This Dataquest Perspective shows representative competitive service call escalation policies, procedures, and models that have been put in place by Compaq, IBM, NCR, and Unisys. Also, the Perspective outlines how calls are managed from the time they come into the support center until the problem is resolved.*

By Eric Rocco

Key Business Issue

What are the key offerings and portfolio elements of the leading hardware maintenance providers?

Strategic Market Statement

"In the near term, vendors that employ sophisticated support call escalation and procedures will benefit from increased customer satisfaction and greater cost efficiencies achieved through consistent and standardized means of call handling."

Introduction

One of the most critical elements of a service provider's reputation for quality may be found in the way it handles the daily calls that come into its support center. Although the clear goal of any product support call is to actually resolve the problem, it is often how that problem gets solved that places one company above another. There are so many processes and tools at work simultaneously in today's hardware service call escalations. The proper balance of customer "hand holding" and internal technical wizardry and personnel resources gets a problem resolved in the shortest amount of time and at the highest level of quality.

This Dataquest Perspective will illustrate the varied service call escalation models employed by four leading hardware service providers: Compaq, IBM, NCR, and Unisys. Each company has a rich history of handling thousands of calls per month and each has invested millions of dollars in support tools and fine tuning their respective escalation models. Each company's model of how it takes a call from the end user and how that call escalates to the highest levels of support (when necessary) will be presented.

Hardware Service Call Escalation Models

Compaq

One of the ongoing integration issues facing the Compaq/Digital Equipment/ Tandem mergers is the combination of three service escalation models employed by each company prior to the merger. Currently in place is a best-of-all-worlds escalation model for hardware service call handling. Figure 1 shows the Compaq Process Flow for Escalated Remedial Problems.

Figure 1
Compaq Process Flow for Escalated Remedial Problems
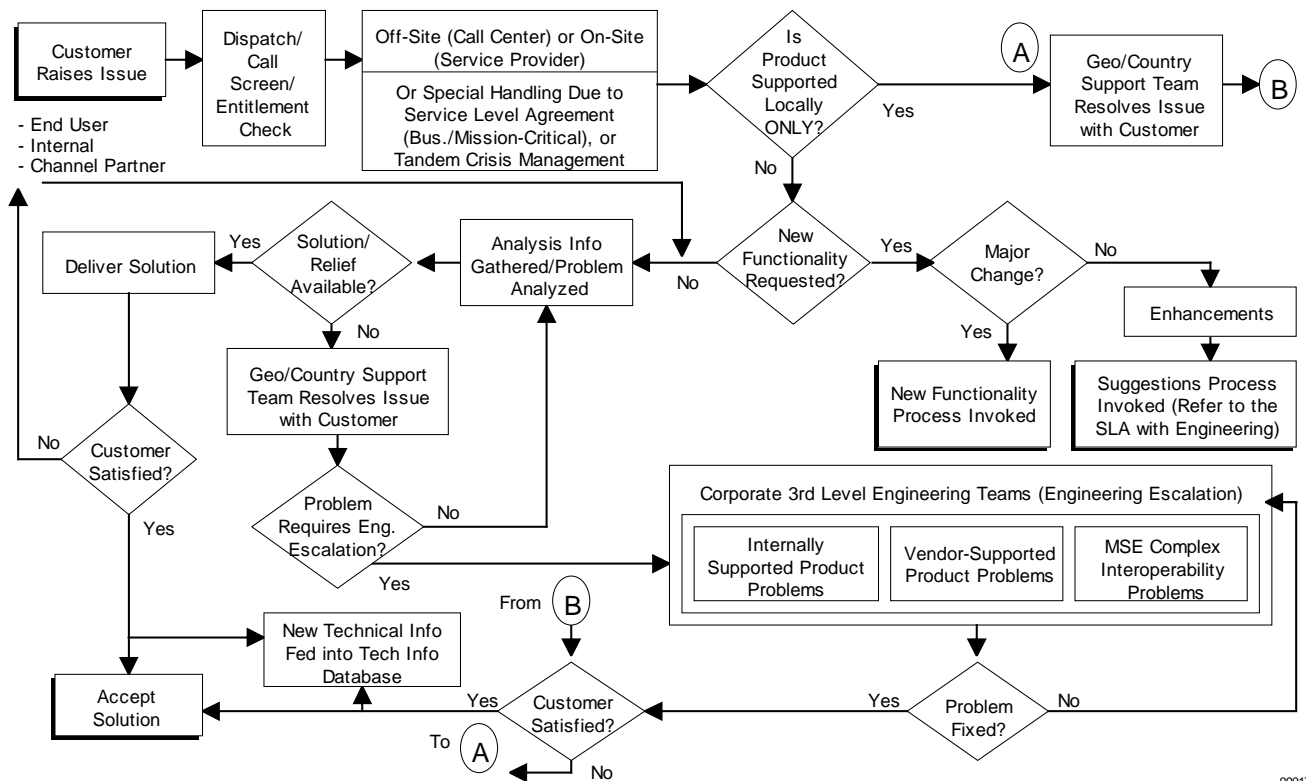
Source: Dataquest as provided by Compaq (January 1999)

The Compaq service call escalation flow is based on a number of determinants. The first thing that gets done once the call comes in is that it is checked for entitlement, then the problem is diagnosed at a basic level to determine where it should be going next (either on-site via a service provider or remotely via the call center).

As the call gets routed via a series of yes/no connections, ultimately, some calls may require third-level engineering support. The call is ultimately considered closed only when the customer is satisfied and has accepted the solution offered.

The Compaq escalation process reflects a streamlined approach that involves three levels of technical support for problem resolution. The time constraints around how long each support level will work on a problem are determined by not only the resources available to solve the problem at a particular level, but also the time triggers that are associated with each service level agreement (SLA). The Compaq escalation process is ultimately based on the customer's acceptance of the solution, and that is one of the major elements that makes it a successful model.

IBM

IBM is certainly one of the pioneers in service call escalation management. The company was one of the first vendors to create a system that allowed simultaneous actions to occur in the escalation process, with the goal of minimizing downtime. The company developed a model that allowed for problem diagnosis to occur at the time of field engineer travel and dispatch. This system armed field engineers with the problem information and parts they needed to arrive on-site, ready to fix the problem.

Today, the IBM problem escalation procedure is more evolved. The following section reflects IBM's hardware service call escalation policies and procedures.

IBM's Hardware Service Escalation Policies and Procedures

Service Call Channels
IBM's technical hardware service can be engaged in a number of ways. The method depends on the type of equipment and service options that have been purchased by the customer. These call channels are as follows:

- 1-800-IBM-SERV: IBM's customers can engage technical hardware service by placing a telephone call to 1-800-IBM-SERV. A voice response unit (VRU) will guide the customer to the correct location. Depending on the product family, customers will be routed to either a Problem Resolution Center, or a Customer Service Center. Many service issues are resolved remotely. If a problem can not be resolved remotely, it is automatically routed to IBM's (24x7) Customer Service Center for the purpose of dispatching an on-site field technician.

- Electronic Customer Communication Option (ECCO): This is an option available to network customers with help desk facilities. Customers place service calls via a PC and a special software package, which is installed at their location.

- Remote Support: IBM products such as the AS/400, 309X, 9021, 9121, and 967X processors have the capability to detect error conditions, and to be supported remotely. If error conditions are detected, they are automatically routed on an established link to IBM's Remote Support Center. With the customer's approval, the error information is analyzed by a Remote Support Center specialist. If required, a field technician is dispatched to repair the equipment.

Internal Communications Tools
IBM uses a proprietary tool called Remote Technical Assistance Information Network (RETAIN) as its method of communicating and escalation of customer problems. RETAIN is a data repository and information access system made up of several parts, including problem diagnostic information, and a database for tracking service calls. It contains, among other things, a historical database of problems and resolutions. Customer information, problem symptoms, and product fixes are all accessible by the service technicians. By using this tool to answer reoccurring questions, service technicians can increase their productivity and their ability to improve resolution time.

IBM's Services Managers use many systems and databases that track every aspect of a service call. They can view customer information, the nature of the problem, how long it has been a problem, and which field technician has been assigned.

IBM's field technicians carry interactive pagers (full display and keyboard capabilities) and the Mobile Solution Terminal. These allow the field technicians to send and receive information on service calls, make requests for parts, access the information archived in RETAIN, and view all service-related documentation.

Technical Hardware Support Levels

There are three levels of IBM hardware support that can be engaged to resolve customer problems:

- Level I: This is product support that is performed by field service technicians. It is anticipated that most hardware problems will be resolved at this level. Field technicians use the product's diagnostic and maintenance package, and RETAIN (symptom fix database) to resolve customer problems. If needed in difficult situations, field technicians can engage the Level II and Level III support facilities. These are part of IBM's technical problem escalation path, and an integral part of IBM's technical hardware support strategy.

- Level II: This level of support is located in IBM's Support Centers, and is the next step in the path of technical problem escalation. Support Center technicians have an in-depth level of expertise because of the concentration and specialization within their assigned product sets.

- Level III: This level of support is located in the plants of origin, and typically would be engaged by Level II. This level of support is available when field and Support Center levels have exhausted their resources and the problem requires more in-depth knowledge. Product engineers who provide support at this level have typically been part of the product development effort.

Hardware Technical Escalation

It is important to note that for IBM's mature products, hardware problems are usually resolved at support Levels I and II. Engineering changes have already been implemented, and a vast experience base is present in the field locations. There is usually sufficient information on the problem databases to resolve customer problems without further escalation. However, if there are problems that require additional support, they will be escalated to the next level.

IBM's hardware technical support process consists of the following echelons of support personnel:

- Field Service Technicians: Field technicians deliver the initial on-site product support. They use the product's diagnostic and maintenance package, and RETAIN to resolve technical problems.

- Area Support: Area "Top Guns" are highly skilled field technicians within select product families. They are available to support the field service technicians.

- IBM Support Center: These are typically hardware, software, and network specialists housed at an IBM Support Center. They provide telephone support to the on-site field technicians. They have access to the tools and databases, and can help the field technicians to further escalate technical problems.

- Plant of Origin Support: Technicians at this level are typically product engineers who participated in the development of the product they now support.

When it has been determined that a problem requires on-site service, a field technician is dispatched from one of IBM's Services offices. IBM does not guarantee a response time for its service calls, but the field technician will respond to the call quickly based on the customer's contracted SLAs. Field technicians have easy access to IBM resources from the IBM Support Center and Area Support for assistance in solving hardware problems.

IBM has internal time guidelines that trigger the initiation of an Alert (see Table 1). It is important to note that although there are guidelines, IBM field technicians are instructed to initiate an Alert if progress is not being made toward resolution, or if the customer situation warrants it. The purpose of an Alert is to notify Services management and other IBM personnel with account responsibility that a problem exists. Prior to opening an Alert, the field technician may have already engaged Level II support for assistance. Alerts can be escalated to Critical Situation status if required.

Table 1
IBM's Alert Guidelines for Hardware Incidents

Customer Situation	Time Frame to Open Alert
Any system or critical I/O that is down, or system that is down because of a repeat service call	4 hours maximum, or as customer situation warrants
Any system severely restricted, or critical I/O with no backup available	4 hours maximum, or as customer situation warrants
Critical I/O restricted, with backup available and in place	6 hours maximum, or as customer situation warrants
End-user I/O down, or severely restricted	8 hours maximum, or as customer situation warrants

Note: Critical I/O = Any DASD, tape drive, or system printer
Source: Dataquest as provided by IBM (January 1999)

In an Alert situation, Level II will continue to work with the field technician and area support toward problem resolution. Level II will contact Level III support, as required.

A final stage of criticality involves the opening of a Critical Situation. The purpose of opening a Critical Situation is to bring executive management focus on the problem. A Resolution Manager is assigned to the situation and manages the situation to resolution/closure. Critical Situations are entered into the same database as Alerts. Alerts can be escalated to Critical Situation status, if required.

IBM's end-to-end call handling process ensures that hardware problems are either resolved quickly, or if required, escalated to the next highest skill level to resolve the problem. IBM service technicians have, at their disposal, the latest technology such as RETAIN, interactive pagers, and the Mobil Solution Terminal, which allow them easy access to technical information. IBM's three levels of hardware support work together and are structured to produce the quickest resolution to hardware problems. In addition to the levels of support, the Alert and Critical Situation escalation process ensures that management, even up to the executive management level, is aware of any unusual problems that are affecting, or potentially could affect a customer's operation. The total service delivery and repair process allows IBM to resolve hardware problems quickly and effectively. A key element of this system is its Alert triggers, which are based on standard intervals that may be customized (shortened) as the customer situation warrants.

NCR

NCR is another major system vendor that has a mature escalation procedure and a wide array of IT products. NCR's Incident Management Process (IMP) is its single, common, global process that is used to manage every customer incident. Within the framework of the Service Delivery Process (SDP), NCR operates incident management in the Managed Service Centers (MSCs) and the Global Support Centers (GSCs). These centers are NCR's primary providers of remote support services within Worldwide Customer Services. NCR's formal escalation policies and procedures defines the MSCs' and GSCs' working relationships with the customer and with the various field organizations. The IMP defines the responsibilities and accountabilities of each functional role within the MSCs and the GSCs.

The functions within the IMP are designed to manage the scope of the services that are delivered. Examples are as follows:

- Validate the caller's entitlement to warranty or maintenance service
- Determine the scope of service to be provided
- Establish the action-plans to deliver the service
- Set the customer's expectations for problem resolution

When the caller is not entitled to support, the process employs a locally defined procedure to set expectations that there will be a charge for the service. The process also helps determine if the service will be delivered remotely or must be dispatched to the field.

The ultimate goal of the IMP is to define one process that is independent of service offers. Where appropriate, the IMP defines the subprocesses that are required for different service offers. Throughout NCR's formal IMP, it makes reference to the "knowledge processes." The knowledge processes include the retrieval and delivery of existing knowledge as well as the capture and classification of new knowledge articles. The knowledge processes receive input from the data elements created by all participants in service delivery and are maintained separately by NCR's Americas Managed Services and Global Operations Knowledge Engineering team. Knowledge is used by all roles within the IMP to support the concept of "remotely resolving" the problem whenever possible.

NCR's IMP recognizes and provides linkages to the following processes:

- On-site services process
- Parts logistics process
- Courier care; depot services
- Global customer dispatch process

Managed Service Centers

There are four regions containing MSCs worldwide (Americas in Atlanta, Georgia; EMEA in Amsterdam; Japan in Tokyo; and Pacific Rim in Sydney). The MSCs are the primary remote support interface with the customer. They communicate in the language of the customer, provide solution rediscovery, and own the problem until it is resolved.

The MSCs maintain an important relationship with the Global Support Centers, which provide solution creation for those problems that are not addressed in a knowledge base. The MSCs perform the following functions (for IMP support):

- Call acceptance and ownership until resolution
- Validation of the caller's entitlement to warranty or maintenance service
- Determination of the scope of service to be provided
- Capture of vital information and description of problem or question
- Online knowledge base search for solution (rediscovery)/answers
- Problem resolution or collaboration with a GSC
- Coordination and implementation of solution provided by GSC
- Provide business-critical customer support to enhanced or premium service level customers
- Customer engineer dispatch with proper part and information
- Incident closure with customer agreement

Global Support Center

There are five regional GSCs worldwide. These centers provide deep-level technical support for the MSCs and create and maintain a knowledge base of proven solutions. The GSCs cover areas of large systems, retail, networking, financial, and general purpose computing.

The GSCs perform the following functions:

- Respond to MSC collaborations and provide deeper level support to MSCs

- Validation of the caller's entitlement to warranty or maintenance service

- Determine the scope of service to be provided

- Create and maintain knowledge base of proven solutions

- Maintain high level of expertise in a specific technology area

- Provide business-critical customer support to enhanced or premium customers

- Isolate and resolve problems that require in-depth knowledge or product modifications

- Provide consultation to other NCR internal customers

- Develop and maintain supplier management activities

- Manage incidents with third party suppliers
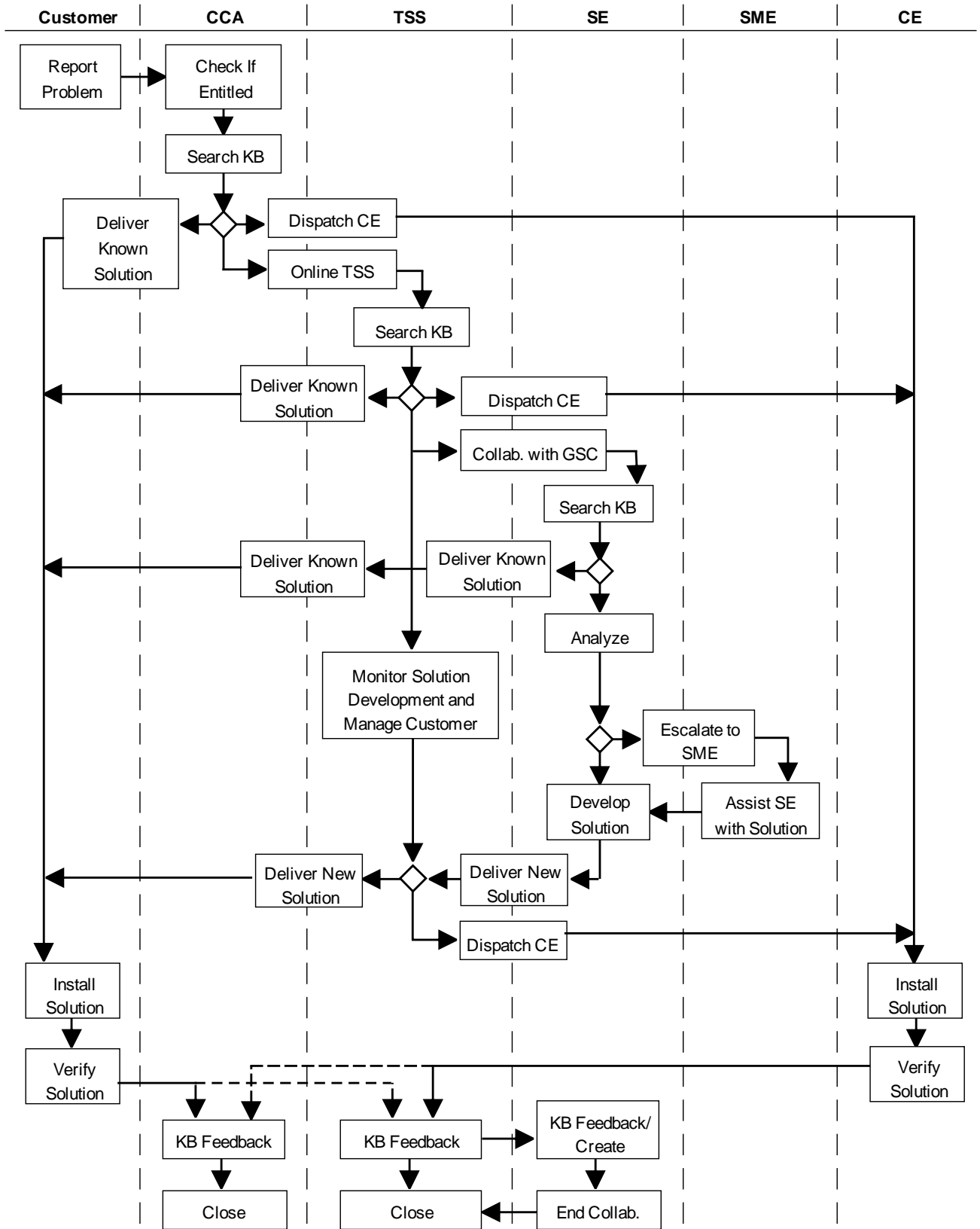
NCR's Service Call Escalation Workflow

Figure 2 illustrates the main flow of NCR's IMP and highlights (by columns) transitions between the various roles. Key acronyms used in the figure include the following:

- Customer Care Agent (CCA)

- Technical Support Specialist (TSS)

- Systems Engineer (SE)

- Subject Matter Expert (SME)

- Customer Engineer (CE)

Many details and exception conditions have been omitted for clarity in this high-level view.

Table 2 outlines NCR's IMP workflow by priority level. Each level has a time frame associated with it for collaboration or escalation to the next level of support.

Figure 2
NCR's Incident Management Process Workflow

Customer	CCA	TSS	SE	SME	CE

Report Problem → Check If Entitled

Search KB

Deliver Known Solution ◇ Dispatch CE

Online TSS

Search KB

Deliver Known Solution ◇ Dispatch CE

Collab. with GSC

Search KB

Deliver Known Solution ← Deliver Known Solution ◇

Analyze

Monitor Solution Development and Manage Customer

◇ Escalate to SME

Develop Solution ← Assist SE with Solution

Deliver New Solution ◇ Deliver New Solution

Dispatch CE

Install Solution

Verify Solution

Install Solution

Verify Solution

KB Feedback

KB Feedback → KB Feedback/ Create

Close

Close ← End Collab.

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Source: Dataquest as provided by NCR (January 1999)

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Table 2
NCR's Incident Management Process Workflow by Priority Level

Guideline Type	Priority 1	Priority 2	Priority 3
CCA Transfer to TSS	15 minutes	15 minutes	15 minutes
CCA Transfer Contact	Immediately online the TSS; if unavailable, online the local management	If unavailable, online the TSS	If unavailable, online the TSS
TSS Collaboration to SE	2 hours	1 business day	2 business days
TSS Management Escalation	4 hours	No later than 7 days	No later than 14 days
Resolution	1 day	7 days	14 days
TSS Communicate Status to Customer	Every 2 hours	Daily	Weekly
TSS Collaboration Contact	Contact SE immediately, page if necessary	Contact SE, if available	Contact SE, if available
SE Acknowledges TSS Collaboration by Phone	Within 15 minutes	Within 2 hours	Within 4 hours
SE Communicate Status to TSS	Every 2 hours, more often as required	Each day, more often as required	Every second day, more often as required
SE Technical Escalation to SME	Notification within 2 hours of collaboration, escalation when resources as exhausted	Escalation when resources are exhausted	Escalate when resources are exhausted

Source: Dataquest as provided by NCR (January 1999)

Unisys

Figures 3 and 4 illustrate Unisys' escalation matrix and flow chart, respectively. The company's escalation model is based on its internal SRMS/SERVIS-Service Response Management System. Figures 3 and 4 also refer to "WALERT." This is a MAPPER-based system that provides a mechanism for technical and nontechnical escalation, situation management, and resolution of critical problems at client sites.

Figure 3
Unisys Escalation/WALERT Matrix

Escalation (Begins at Client Call Placement)		Class I	Class II	Required WALERT Status & Level
From	**To**			
Client Service Delivery (On-Site Service Provider)	!st Level Service Manager	2 hrs.	4 hrs.	
Central Support (Client Telephone Support)	!st Level Service Manager	2 hrs.	4 hrs.	
	Theatre Operations Director (EAD/LAC/PAD)	4 hrs.	8 hrs.	
	Central Support Operations Director (USC)			
Field (1st Level Service Manager)	**WALERT**	**2 hrs.**	**8 hrs.**	**Levels 1-3 Level 4 Optional**
Service Manager	GCS Operations General Manager	4 hrs.	12 hrs.	
Theatre Operations Level	**WALERT**	**4 hrs.**	**12 hrs.**	**84/94 Level 5**
Logistics Manager		**4 hrs.**	**12 hrs.**	**9x Level 5**
Support Manager				
GCS Operations General Manager	GCS Theatre/Director/VP & GM	8 hrs.	20 hrs.	
	GCS Region Director (USC)			
	Marketing Manager			
Notification and update repeated at:		16 hrs.	32 hrs.	
Division Level	**WALERT**			
CSC/Logistics/IS		**8 hrs.**	**48 hrs.**	**Level 6**
Worldwide Level	**WALERT**			
Plant/CSG		**12 hrs.**	**52 hrs.**	**9x Level 7**
Logistics-CSWW (Theatre Support Director)		**12 hrs.**	**52 hrs.**	**94 Level 7**
GCS Director/VP	GCS President	20 hrs.	48 hrs.	
	Marketing Department VP			

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Note: Product issues not resolved through the normal WALERT process may be a candidate for the Corporate Worldwide Critical Resolution Process.
Source: Dataquest as provided by Unisys (January 1999)

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Figure 4
Unisys Escalation Flow Chart
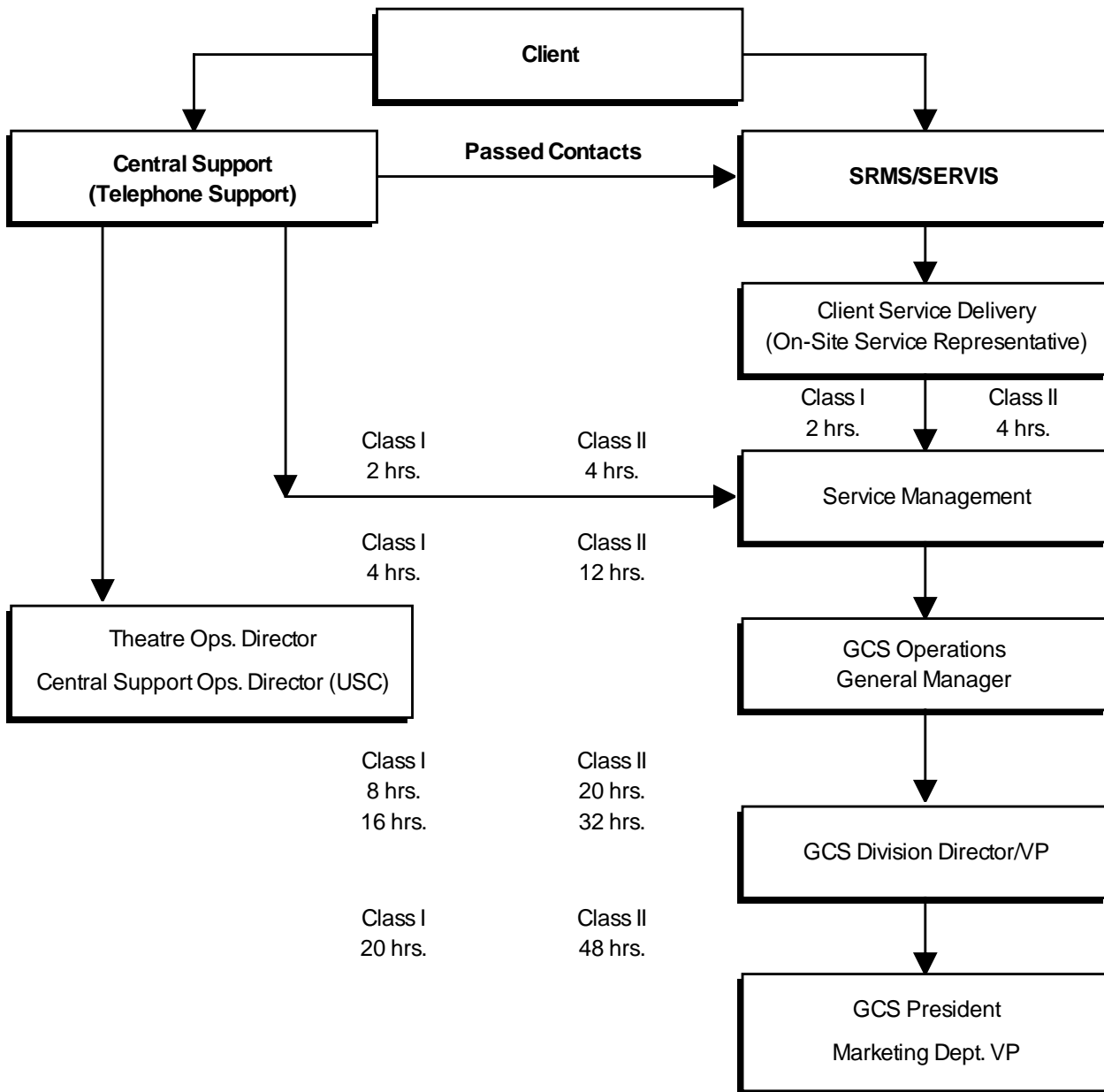
Source: Dataquest as provided by Unisys (January 1999)

Responsibilities

Client Service Delivery (Client On-Site Support)

Client service delivery is provided by an on-site service provider and may include a client service engineer (CSE), maintenance service supplier (MSS), client service representative (CSR), service delivery technician (SDT), and CS account manager. If the problem is not resolved within the specified time, escalation to Unisys Global Customer Service (GCS) management may be required.

Central Support (Client Telephone Support)

Client telephone support is provided by a Client Support Center (CSC) and help desk. If the problem is not resolved by the central support center within the specified time, escalation to GCS service management and theatre operations director may be required.

The escalation of client calls that are directed by a central support group for dispatch of an on-site service provider becomes the responsibility of GCS service management.

GCS Service Management

GCS Service Management (client service manager, area manager, or branch manager) is responsible for following an escalated problem to its full resolution, by ensuring the following:

- Appropriate technical expertise is used

- Necessary actions are taken

- Account sales representative, GCS Operations General Manager, and the client are fully informed of the progress

If a WALERT is opened, the appropriate organization is responsible for ensuring that its WALERT level is updated on a timely basis. If the problem is not resolved within the specified time frame, the problem is escalated to GCS Operations General Manager.

The GCS Operations General Manager is responsible for assigning the problem resolution process to the next appropriate level of technical expertise. This may include the Client Support Center (CSC), Application Support Center (ASC), Computer Systems Group (CSG-Plant), or WWCS Logistics.

The GCS Operations general manager is also responsible for keeping the GCS theatre director/vice president and general manager, GCS region director (USC) and the appropriate marketing management informed on the problem status. If the problem is not resolved within the specified time frame, the GCS Operations general manager is responsible for notifying the GCS theatre director/vice president and general manager per the times specified in the escalation policy.

GCS Theatre Director/Vice President and General Manager

The GCS theatre director/vice president and general manager is responsible for escalating an unresolved problem to the GCS president and appropriate division marketing vice president, if the problem is not resolved per the times specified in the escalation policy.

Dataquest Perspective

The common thread shared by the four companies profiled in this report is a formal call escalation procedure that takes into account the dynamics of finding and delivering a solution to every call that comes in the door, while simultaneously using the most appropriate and efficient resources possible. The best escalation models also take into account the hand-holding techniques used to make customers feel like they know where their problem is in terms of resolution, and involve appropriate top guns to help solve the problem. Compaq, IBM, NCR, and Unisys, as well as many others not included in this research, have found various models with the goal of customer satisfaction in their escalation procedures.

Dataquest Recommendations

When formulating or refining service call escalation policies and procedures, IT service providers should consider the following Dataquest recommendations:

■ Create a tiered approach (typically three levels of support) that consistently and effectively handles all calls in the same manner. All call incidents must move down a path that treats them equally to all other calls.

■ All escalation models must adhere to a two-pronged strategy: Maintain call management efficiency while ensuring that customer satisfaction is No. 1. These two goals can sometimes be contradictory, but must be optimized to work in harmony if the escalation strategy is to be effective. A key customer satisfaction mechanism is implementing a customer follow-up call as the final step of the escalation procedure. This call should be made within seven days of the resolution; its goal is to ensure that the problem is solved and to make customer feel that their satisfaction is important.

■ Implementation of leading-edge tools and systems is essential to any effective escalation model. These tools include call handing and management software, problem diagnostic tools (including remote and call home capabilities), and a robust knowledge database that gets smarter every time a call incident adds to it. The best escalation models integrate all three and arm support person-nel, who are managing the escalation, to feel confident in their execution, which in turn creates a more satisfied customer.

■ It is important for lower levels of support to recognize that when they cannot handle a call, they should escalate it immediately. Vendors should not encourage heroism at the lower levels of support (that is a level 1 technician who tries in vain to find a solution while wasting precious resolution time). However, it is also important that the percentage of calls being escalated beyond level 1 do not exceed its optimized resources. In a three-tiered escala-tion model, the mix of calls handled by each level could look somewhat as follows:

  ❑ 85 percent of calls closed in level 1

  ❑ 12 percent at level 2

  ❑ 3 percent at level 3

■ All technical support personnel in management and on the front lines must maintain a clear understanding of the escalation policies and procedures. A comprehensive document outlining the goals and policies of the escalation model must be required reading.

For More Information...

In the United States:	+1-203-316-1111
In Europe, the Middle East, and Africa:	+44-1784-488819
In Asia / Pacific:	+61-2-9448-8386
In Japan:	+81-3-3481-3670

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