Heavy Reading – Independent quantitative research and competitive analysis of next-generation hardware and software solutions for service providers and vendors

KEY FINDINGS

- **HP & Lucent now** hold leading mindshare positions in the OSS market
- **Agilent & Telcordia** are falling behind the in the major leadership metrics, despite strong name recognition
- **Microsoft & CA are** flexing marketing muscle but still struggling for recognition
- **Smaller specialists** in OSS, such as Axiom, NetCracker, and Smarts, are gaining mindshare with prospective customers
- **Some CLEC-centric** OSS vendors are successfully recovering from that market's collapse by focusing on specific service markets, such as DSL

VOL. 1, NO. 4, OCTOBER 2003

Heavy Reading's 2003 OSS Market Perception Study

This global survey of 433 service provider and enterprise employees analyzes customers' recognition of 160 vendors in 12 operations support system (OSS) product categories and identifies market leaders for price, performance, quality/reliability, and service/support. The results are analyzed in more than 50 pages, accompanied by a searchable online database that enables clients to see how perceptions differ by geographical region, service provider type (e.g., incumbents versus new competitors), and job function (e.g., engineers versus corporate management).

[EDITOR'S NOTE: THE MATERIAL IN THIS DOCUMENT IS EXCERPTED FROM A FULL REPORT BY *HEAVY READING* AND HAS BEEN PREPARED FOR DISTRIBUTION BY HP THROUGH A SPECIAL ARRANGEMENT WITH *HEAVY READING*. CONTENT HAS BEEN EDITED FOR LENGTH, BUT ALL WORDING PRESENTED HERE IS UNCHANGED FROM THE ORIGINAL REPORT. TO PURCHASE A COPY OF THE FULL REPORT, PLEASE CONTACT *HEAVY READING* AT WWW.HEAVYREADING.COM.]

I. Introduction

The chaos that has long defined the operations support system (OSS) market shows no sign of abating and in fact is escalating on many fronts. As carriers scramble to roll out new services and integrate existing product lines to run more cost-effectively, the strain on their back-office systems is growing.

The chaos presents both promise and peril to suppliers of OSSs. On the positive side, OSS suppliers may be looking at a once-in-a-lifetime opportunity to secure huge and lucrative contracts from big incumbent carriers. For instance, AT&T has accumulated some 70 different billing systems over the years. The carrier's goal is to sweat that group down to 11 systems by the end of this year and to have a single system in place by 2005.

The peril lies mainly in the fragmented nature of the OSS environment. Put simply, there are no cookie-cutter approaches to OSS implementation. Each carrier has a unique OSS profile, and each needs products that address that profile specifically – if not exclusively. Factor in the broad and expanding scope of OSS systems and applications, and the fragmentation grows exponentially.

OSS suppliers aren't just selling against one another. They also are competing against already installed legacy systems, many of which are home-grown and originated decades ago, as well as against systems integrators that have made customized application development an incredibly lucrative business. For OSS vendors, one obvious key to success in such a fragmented and complicated environment is market awareness. Even in the arcane world of carrier OSSs, mindshare leads directly to market share. The question is: Are suppliers succeeding in establishing a strong identity in this fractious market?

The ***Heavy Reading*** **Fall 2003 OSS Market Perception Study** answers this question with a detailed look at how OSS suppliers are viewed by their prospective customers. The heart of the study is an invitation-only survey gauging the perceptions of service provider employees and enterprise users regarding OSS suppliers in 12 product categories. 433 respondents representing more than 90 carriers worldwide participated in the project, yielding critical market perception data for 160 different OSS vendors (71 public, 89 private).

Survey participants rated vendors in each product category according to five criteria:

- Name recognition
- Price leadership
- Performance leadership
- Market leadership in product quality and reliability
- Market leadership in service and support

The final base of 433 survey participants represents employees from more than 90 different service providers worldwide. Some enterprise users of non-telecom-specific OSS applications (such as customer relationship management systems) were included in the survey as well.

EDITOR'S NOTE:

The material that follows contains numerical results from a market perception survey conducted by *Heavy Reading* in September 2003. The survey measured respondent awareness and perception of suppliers in 12 different OSS categories. For each OSS category, respondents were presented with a list of companies that supply products in that category. Respondents were then asked to indicate all companies they recognized as being suppliers in that category. They were then asked to identify the one company that they consider to be the leader in price, the one company that they consider to be the

leader in performance, the one company that they consider to be the leader in quality and reliability, and the one company that they consider to be the leader in service and support.

For each company in the survey, the percentages shown in the tables reflect the share of respondents who identified that company as either a supplier or a market leader for that particular category. Vendor rankings in the product categories were determined by a simple grading system in which the leading vendor in each survey category (recognition, price, performance, quality and reliability, and service and support) received a score of 1 for finishing first in the category, 2 for finishing second, etc. Scores for all five categories were then added, with the lowest score yielding the top-performing vendor in that category. In case of ties, all vendors with the same rating received the same score.

A more complete explanation of the survey methodology is available for download at this address: http://img.lightreading.com/heavyreading/pdf/hr20031024_meth.pdf

II. Overall Findings

Although the survey focused on perceptions of OSS vendors within specific product categories, results from those individual categories can be aggregated to yield a general overall picture of how the OSS market is perceived by prospective customers.

To get this composite picture, *Heavy Reading* performed a cross-category analysis of results for 30 vendors. These vendors were selected because of the breadth of their product lines – each offers products in at least three of the 12 product categories included in the survey. The cross-category ratings represent the average score for each vendor in all categories in which that vendor offers products.

Overall Results (Vendors Appearing in Three or More Product Categories): The Top Ten

RANK	VENDOR	TOTAL # OF CATS.	RECOGNITION	PRICE	PERFORMANCE	QUALITY & RELIABILITY	SERVICE & SUPPORT
1	Hewlett-Packard Co.	5	64.8%	16.8%	20.5%	20.1%	21.5%
2	Lucent Technologies Inc.	8	65.8%	10.6%	14.3%	19.7%	20.6%
3	IBM Corp.**	4	55.5%	10.9%	8.6%	8.2%	13.1%
4	Telcordia Technologies Inc.*	6	50.2%	9.3%	10.0%	10.2%	15.2%
5 (tie)	ADC Telecommunications Inc.	4	47.7%	13.0%	7.4%	11.0%	7.3%
5 (tie)	Micromuse Inc.	6	35.6%	9.4%	11.2%	12.4%	7.9%
7	Amdocs Ltd.	3	38.9%	7.8%	6.1%	5.2%	5.6%
8	Agilent Technologies Inc.	5	52.1%	3.4%	6.8%	8.9%	4.9%
9	MetaSolv Software Inc.	4	30.7%	7.2%	3.7%	5.0%	2.2%
10	Vitria Technology Inc.	3	16.8%	2.9%	5.2%	3.8%	3.9%

** Private company*
*** Includes results from IBM Tivoli*

Hewlett-Packard Co. took top honors for overall vendor performance. HP had the highest average score in four of the five survey categories, finishing second to Lucent Technologies Inc. only in the name recognition ratings. HP's strongest showing by far was in the mediation system market segment, where it was recognized by more than 80 percent of survey respondents.

III. Mediation Systems

Billing mediation products assemble information from various network elements into specific records, which are then processed by retail billing systems to generate bills. Mediation systems are fundamental to the success of retail billing systems and are often supplied in tandem with them. Most mediation systems use batch processing to create records, but newer systems handle transaction processing in real time. Real-time systems also can be used in network event management for service assurance functions.

Technology Overview

Mediation has been a necessary but unglamorous component of the carrier billing process. For conventional voice service, for instance, mediation systems create the call detail records (CDRs) that are then forwarded to the retail billing system for processing into bills. But billing for data and other services on a usage or event basis requires new billing mediation systems that can collect usage information from a range of network elements and process these in real time. New mediation systems also provide the potential for delivering prepaid billing outside the Intelligent Network realm of incumbent carriers.

Market Overview

The current market for mediation systems includes a few well-established players (Hewlett-Packard Co., Intec Systems Inc., Ace*Comm Corp., and Comptel Corp.) along with some relative newcomers (Narus Inc., Openet Telecom Inc., TimesTen, and Xacct Technologies Inc.) that are focused on mediation systems that allow for usage-based billing, such as for data services.

Survey Results: Mediation Systems [Top Six Vendors]

RANK	VENDOR	RECOGNITION	PRICE	PERFORMANCE	QUALITY & RELIABILITY	SERVICE & SUPPORT
	(number of responses)	(27)	(11)	(14)	(12)	(12)
1	Hewlett-Packard Co.	81.5%	18.2%	42.9%	41.7%	50.0%
2	Intec Systems Inc.	37.0%	18.2%	14.3%	8.3%	25.0%
3	Xacct Technologies Inc.*	48.1%	18.2%	7.1%	25.0%	0.0%
4	Ace*Comm Corp.	29.6%	9.1%	7.1%	8.3%	0.0%
5	Comptel Corp.	37.0%	0.0%	7.1%	0.0%	16.7%
6	Narus Inc.*	25.9%	0.0%	7.1%	8.3%	0.0%

** Private companies*

Those who are familiar with the category overwhelmingly named Hewlett-Packard as the leading supplier. HP was recognized by just over 80 percent of the respondents, well ahead of runner-up Xacct Technologies, which was identified by only 48.1 percent. HP also was the clear choice for leadership in performance, quality and reliability, and service and support, although, again, sample size was limited.

Intec Systems drew enough support across all survey categories to finish second to HP in the overall results. Xacct came up empty in the service and support leadership vote and slipped to third place overall. Still, it scored higher perception ratings than more-established rivals Ace*Comm and Comptel.

IV. Performance Monitoring

These systems measure and monitor particular technologies, applications, or functions of networks. For instance, in an IP network a performance monitoring system tracks latency and packet loss. There are systems designed specifically to monitor performance of voice traffic, and others for Frame Relay, ATM, and so on. There are also OSSs specific to wireless networks, as they are optimized to monitor, for example, the quality of the air interface or the transmission path between base stations and the backbone network.

Technology Overview

Performance monitoring systems collect circuit-switched call detail records and IP performance measurements from the network elements and element management systems supplied by equipment manufacturers. They also collect and aggregate data that can be used by other OSSs and BSSs (business support systems) to help with capacity planning and to isolate congested links in the network.

The value of a performance monitoring system lies in its ability to report on usage trends, alert operators of service degradation, and provide raw data that can be used to measure how network performance is measuring up to service-level agreements. Performance monitoring systems also serve as valuable subcomponents to an emerging, high-value OSS segment known as service management.

Market Overview

Performance monitoring is the second-largest segment in the service assurance market, behind fault management. This is another OSS category dominated by the leading IT and infrastructure vendors, but there are some strong alternative players with dedicated and niche plays, making this part of the OSS market one of the most fragmented and best contested in terms of brand recognition.

Survey Results: Performance Monitoring [Top Six Vendors]

RANK	VENDOR	RECOGNITION	PRICE	PERFORMANCE	QUALITY & RELIABILITY	SERVICE & SUPPORT
	(number of responses)	(100)	(47)	(55)	(62)	(51)
1	Hewlett-Packard Co.	72.0%	25.5%	20.0%	22.6%	25.5%
2	Lucent Technologies Inc.	69.0%	10.6%	14.5%	22.6%	11.8%
3	ADC Telecommunications Inc.	38.0%	10.6%	9.1%	8.1%	11.8%
4	Agilent Technologies Inc.	50.0%	4.3%	12.7%	12.9%	11.8%
5	Telcordia Technologies Inc.*	44.0%	4.3%	5.5%	6.5%	9.8%
6 (tie)	Concord Communications Inc.	30.0%	6.4%	9.1%	6.5%	3.9%
6 (tie)	Spirent plc	32.0%	10.6%	3.6%	4.8%	5.9%
6 (tie)	Visual Networks Inc.	33.0%	6.4%	7.3%	3.2%	5.9%

** Private company*

Hewlett-Packard Co. had the greatest mindshare among the 100 respondents to the performance monitoring sector across all five survey categories. HP's biggest edge came in the price and

service and support categories, where its leadership scores more than doubled those of runner-up Lucent Technologies Inc.

For nearly half of the suppliers covered in this part of the survey, lack of name recognition is a severe problem. Eleven of the 23 vendors were identified as performance monitoring vendors by fewer than 10 percent of the survey respondents.

V. Fault Management Systems

These systems collect and present alarms and events by interrogating network equipment and/or element management systems. Many fault management systems allow for logging in to specific network elements to check for additional information that might be relevant to the alarm. Fault management systems typically also handle other tasks, such as performance monitoring.

Technology Overview

Fault management systems are a key unifying point in network management operations. They offer a single view to the array of network elements and element management systems supplied by equipment manufacturers for specific products.

Market Overview

Fault management is the largest segment within the service assurance OSS market. Telcordia Technologies Inc. (then known as Bellcore) developed the telecom industry's first fault management system for circuit-switched elements. Agilent Technologies Inc., Hewlett-Packard Co., Micromuse Inc., and many small suppliers emerged in the mid-1990s with products to address events and faults generated by IP devices.

Survey Results: Fault Management Systems [Top Six Vendors]

RANK	VENDOR	RECOGNITION	PRICE	PERFORMANCE	QUALITY & RELIABILITY	SERVICE & SUPPORT
	(number of responses)	(79)	(36)	(50)	(50)	(42)
1	Nortel Networks Corp.	69.6%	11.1%	20.0%	8.0%	23.8%
2	Hewlett-Packard Co.	63.3%	13.9%	14.0%	24.0%	16.7%
3 (tie)	Lucent Technologies Inc.	65.8%	11.1%	6.0%	14.0%	7.1%
3 (tie)	Micromuse Inc.	46.8%	16.7%	16.0%	18.0%	7.1%
5	Telcordia Technologies Inc.*	50.6%	5.6%	6.0%	8.0%	7.1%
6	IBM Tivoli	57.0%	5.6%	4.0%	6.0%	9.5%

Overall, name recognition was strongest in fault management than in any other product category in the OSS survey. Six suppliers were identified by more than half of the 79 respondents in this category, led by Nortel at 69.6 percent. Nortel also received the most support for price and service and support leadership, putting it in first place in the overall ratings, just ahead of Hewlett-Packard. HP emerged as the clear choice in the product quality and reliability category, where it garnered a 24.0 percent leadership score.

VI. Element Management Systems

The element management system (EMS) is the first-line watchdog in carrier networks. When vendors sell equipment to service providers, they must provide some means of remotely managing that equipment once it is installed. At a minimum, alarms need to be collected and cards need to be configured from a network operations center. Each hardware manufacturer offers its own EMSs for its products, but the focus of this survey is on vendors that offer off-the-shelf multivendor EMS software to replace multiple EMSs, thereby reducing the number of monitoring software tools in a carrier network.

Technology Overview

EMSs are increasingly built on J2EE technology, which has proved to be the technology with the most available tools. Equipment vendors see J2EE as a way to get scaleability that has historically been hard for them to achieve. Most EMSs work as standalone systems, but where they are connected to other OSSs, TMF 814 (CORBA-based) interfaces are the most commonly provided.

Market Overview

Virtually all equipment vendors provide EMSs for their equipment. Typically in the past, vendors included the EMS in the hardware price, essentially giving it away to equipment buyers. Although equipment vendors often now charge extra for EMSs, those prices are still relatively low.

This creates an obvious problem for software vendors selling multivendor EMSs and has had a clear impact on the size of the market. Although multivendor EMS suppliers have had some success positioning their products as a way to simplify network management, the higher price tags on multivendor EMSs remains a mitigating factor against more widespread adoption.

Survey Results: Element Management Systems [Top Six Vendors]

Rank	Vendor	Recognition	Price	Performance	Quality & Reliability	Service & Support
	(number of responses)	(70)	(34)	(41)	(41)	(39)
1	Cisco Systems Inc.	88.6%	29.4%	24.4%	29.3%	30.8%
2	Lucent Technologies Inc.	71.4%	17.6%	9.8%	17.1%	35.9%
3 (tie)	Hewlett-Packard Co.	62.9%	26.5%	19.5%	12.2%	15.4%
3 (tie)	Micromuse Inc.	44.3%	11.8%	24.4%	22.0%	12.8%
5	Agilent Technologies Inc.	58.6%	5.9%	12.2%	17.1%	2.6%
6	Visual Networks Inc.	30.0%	2.9%	2.4%	2.4%	0.0%

It's not surprising that two of the biggest suppliers of equipment to the carrier market – Cisco and Lucent – emerged as the overall leaders in market perception for the EMS category. Cisco was by far the most widely recognized supplier for the 70 respondents in this category; it earned the top rating for price and quality leadership and tied with Micromuse for first in the performance category. Lucent outscored Cisco in the service and support category but could do no better than fifth place for performance.

Despite a relatively low recognition rating (44.3 percent), Micromuse earned enough recognition for performance and quality leadership to push it into a tie with Hewlett-Packard for third place in the overall ratings. HP lagged slightly in the quality and reliability ratings, while its former property Agilent came up short in market perception for price leadership and service and support.

VII. Conclusion and Key Findings

Key findings on carrier market perception of OSS suppliers include the following:

- **Brand recognition is a definite weakness across almost all OSS market segments, even for companies with a long history in the telecom business.** No vendor in the OSS market has been able to duplicate the success of telecom equipment maker Cisco Systems Inc. in getting across-the-board name recognition from prospective customers. For instance, among the 25 suppliers of retail billing systems, only one – ADC Telecommunications Inc. – was identified by more than half of the respondents to that category.

- **Lucent and HP now hold leading mindshare positions in the OSS market.** Lucent Technologies Inc. was the most recognized supplier across all OSS product categories, while Hewlett-Packard Co. emerged as the top-rated company for price, performance, quality and reliability, and service and support.

- **Telcordia and Agilent are falling behind the market leaders.** An average of only 50.2 percent of survey respondents identified Telcordia Technologies Inc., the long-time OSS supplier to U.S. local incumbents, as a vendor in the six categories in which it offers products. Although Agilent Technologies Inc. had the fourth-best name recognition overall, it received proportionally less support for leadership in the other survey categories, pushing it all the way down to eighth place in the cross-category ratings for OSS vendors. In contrast, Micromuse Inc. finished among the top five in the price, performance, quality and reliability, and service and support categories, despite being recognized by an average of only 35.6 percent of respondents.

- **Telecom outsiders Microsoft and CA are struggling for recognition in the OSS market.** So far, the marketing muscle of Microsoft Corp. and Computer Associates International Inc. hasn't translated to positive perceptions in the carrier market. Microsoft was recognized by 67.4 percent of respondents to the OSS middleware survey, but low perception scores in the other leadership categories put Microsoft in a disappointing sixth-place tie with webMethods Inc. in the middleware survey. In both the fault management and service management categories, CA was not recognized as a vendor by more than 60 percent of survey respondents.

- **Some smaller OSS specialists are getting noticed by prospective customers.** Among the smaller private companies in the OSS field, Axiom Systems Inc., NetCracker Technology Corp., System Management Arts Inc. (Smarts), and Telution Inc. drew the highest overall ratings from survey respondents. But results were not nearly so promising for many other smaller players, who are toiling in almost complete anonymity as far as survey respondents are concerned.

A Note on Survey Participants

The 433 participants in the Heavy Reading Fall 2003 OSS Market Perception Survey included representatives from more than 90 telecom carriers worldwide, including the following companies: AT&T Corp., Adelphia Cable, Alltel Communications Inc., Bell Canada, Bell Mobility, BellSouth Corp., British Telecom, Cable & Wireless plc, Chungwha Telecom, Cingular Wireless, France Telecom, Frontier Corp., IDT Corp., Level 3 Communications Inc., MCI Corp., NTT Corp., Nextel Partners, Qwest Communications International Inc., SBC Communications Inc., Singapore Telecom, Sprint Corp., Time Warner Telecom, T-Mobile, Telefonica, Telekom Malaysia, Verizon Communications Inc., and XO Communications.