

IT WILL BE ONLY AS GOOD AS THE NETWORK

By Susana Schwartz

For the moment, inaccurate accounting records are preventing carriers from fully capitalizing on new revenue sources from wireless data products—products on which carriers rely for increasing ARPU, as voice prices continue to drop. For carriers to profit from complicated intelligent network, IP centrex and next-generation services, they need to rate per message and by message type. Rating engines must, therefore, process live data from different network elements (NEs), and convert that data to a common format. Only then can reformatted data be rated, submitted to billing engines and fed into an online, analytical environment in real time or near real time.

That process will rely not only on rating, but also mediation—and the NEs are becoming the principal components for next-generation rating. For that reason, rating engines in the data world will only be as good as the network elements and mediation processes surrounding them.

“I always tell marketing, I can rate or bill anything, but that means nothing if I don’t receive the right information from the network, or third-party service providers,” says George Mehok, director of strategic development at Verizon Wireless.

Equipment manufacturers recognize the need, he believes, but their No. 1 objective has been to ensure network delivery, not accounting. Although that is understandable, he says, carriers are now pushing network equipment manufacturers and usage mediation vendors to “step up to the plate” and concentrate on accounting for rating and billing when rolling out new products, such as switches for multimedia message service centers (MMSCs).

“I haven’t seen any network providers or mediation companies that have made inroads in ensuring that, but I understand

their objective initially had to be ensuring the service works,” Mehok says. “But now we’d like to ensure usage can be rated when sent to billing.” In his view that lack of consistency in gathering the germane data off the network has hobbled carriers’ creativity in pricing new services.

Until networks consistently generate and mediation captures accurate data reflecting the unique aspects of calls, carriers will not be able to capitalize fully on next-generation services.

For now, carriers have been going with flat fees, to eliminate any chance of overcharging as a result of inaccurate data. “If the network feeds rating inaccurate message types or incorrect billing indicators, it could mean the difference between 25 cents for the call or 10 cents. A 20 megabyte file misinterpreted as a 2 megabyte file could mean the difference between 99 cents and 10 cents per call for us,” Mehok says.

The Process

Once manufacturers reliably gather information off the NEs that correctly identifies transactions, a process or flow of information will occur within rating and billing. The transactions culled from the network will be converted into multiple detailed records, and network-event processors will then put the data from the NEs into standard formats understandable to rating modules in the prebilling phase. To properly rate usage records, prebilling processors will audit usage data as it moves through the system and provide archive procedures for billed usage records.

As that process comes together, carriers must test not only the technical capabilities, but the revenue assurance capabilities of the networks and the rating and billing systems. That means new services will involve several levels of testing for most carriers.

“At the project level, we have IT personnel that make sure messages are sent and received, rated and billed appropriately,” Mehok explains. “Then revenue assurance testing is usually conducted by finance and marketing groups that focus on the revenue that is garnered from new products.” In fact, wholesale is becoming an important component of rating: “That is where unusual algorithms are needed to handle more complex rating among partners,” he says. “Therefore, the back end now has to be usage-oriented.”

When errors appear during testing, it will be up to the carriers to proactively communicate with equipment manufacturers about problems. “This phase can definitely translate into real top-line revenue impact, especially when you have to upgrade a network multiple times with software patches on the network side, after which time you have to test yet again,” says Mehok. A delay in launching a new product because of constant tweaking to the network carries a penalty: “There is a revenue loss each and every day that goes by without being able to charge for new services,” he says.

Pioneering New Services

Despite any hardships, carriers must press forward with event-based services if they are to remain competitive. Most of the leaders are now forming agreements with content providers, as their Asian and European brethren did. Not long ago, NTT DoCoMo executives promulgated the 80-20 split in i-mode, sending most of the revenue generated by new content services to the content developers. American carriers were greedier, early on; but they seem to have caught on to the realization that good content, rating appropriately and ensuring compensation through diligent revenue assurance are keys to succeeding with IP and intelligent network services.

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Verizon Wireless, for example, is enhancing its new high-speed ExpressNetwork, launched as the first phase of 3G services in mid-2002. Based on 1XRTT, the network gives Verizon Wireless, a CDMA carrier, throughput of up to 144 kilobits per second. The carrier began building architecture in preparation for 3G back in 2000. “We wanted to offer customers streamlined access to data content, which would be a step up from the 14.4 speed throughput standard for digital connections at the time,” Mehok says.

Riding over that network is Verizon Wireless’ newly launched Get-It-Now service, a BREW-based service offering downloadable applications (such as pre-Super Bowl ESPN sports trivia games), “Lord of the Rings” image downloads, ring tones, games and pictures.

Mehok credits BREW as the enabling rating technology for pricing at different levels, whether monthly subscription rates or per-download agreements, or for revenue sharing with third-party content providers. “Because of the BREW rating infrastructure, we are able to track the usage in a much more advanced manner,” he says. Customers typically pay a \$4.95 monthly fee for a predetermined number of uses.

Mehok believes BREW really opens the door for content providers. In this case, it facilitated the recent alliance between Verizon Wireless and Microsoft to jointly offer VZW-with-MSN, a product that gives MSN customers “wireless Web options” for Web browsing and, conversely, gives Verizon customers access to MSN content. Each company expects to reap the benefits of gaining access to several million new customers who wish to email, instant-message or

personalize content. For the moment, that service, too, is available for a flat monthly access charge.

As for rating data that feeds into billing, most carriers’ strategy is to keep the pricing simple and straightforward, so as not to disenchant users of new data services. For that reason, Verizon Wireless adds no additional charge for different types of content in its VZW-with-MSN service. However, with its BREW offer, Verizon has been charging according to the type of download. “The infrastructure is in place there, so we can charge according to content,” Mehok says. All the same, he concedes, “we have to see where the market takes us and what customers are amenable to.”

A Modular Approach to Rating

As carriers move toward the aforementioned services, they must “componentize” infrastructure—especially in the case of larger, Tier 1 players. “When you have so many disparate systems, there of course exists the notion that you cannot just replace huge billing systems, as the risk would be too great,” says Carl Wright, president of Service Level Corp. It is one of a handful of stand-alone rating companies (Sepro, RateIntegration, HighDeal, Am-Beo) emerging to facilitate what he deems a “modular approach” to upgrading rating.

“Existing billing infrastructures won’t handle 10 new services, and it doesn’t make sense to rebuild billing infrastructure to handle something like horoscopes,” says CEO John Brady at Am-Beo. The company also works with carriers to extend their existing billing systems to handle new event- and content-based services.

Even though many billing vendors are

now upgrading to include event-based rating, Wright believes that traditional billing systems—to which rating was usually an adjunct—do not focus on being open and “non-rigid” in terms of integration. “Usually their rating modules are part of an entire suite of back-office products,” he says, “so they are interested in doing the entire back end, rather than just the rating piece.” Nevertheless, some billers are going ahead with the rollout of adjunct rating modules—among them Portal, which bought Solutions27 as part of that strategy, and Convergys, with its Geneva acquisition.

“We see companies trying to extend existing mediation architecture and legacy rating, but getting only one-tenth of the potential they want,” says Flemming Vitus, vice president of product management and sales for Digiquant, which, from a rating perspective, is trying to enhance its ability to integrate with mediation and the network to enable real-time attributes in rating. Vitus believes part of the problem with rating is that engineering is driving strategy, as strategic planning and marketing are floundering.

“Many carriers feel great to roll out multiple new services—but if they can only rate one way, it’s not as great as it could be,” Vitus says. Existing limitations in rating usually require six months or more of work by consultants and integrators, he says. What most companies are missing is that they are driving new services from a technology point of view, he says, without the same focus on the BSSs and OSSs.

What the Carriers Say

Both Verizon Wireless and Sprint PCS took a componentized, modular approach to upgrading their rating with new

modules for wireless data. That approach meant they built a standalone rating engine for new services.

“We needed to upgrade existing legacy systems, as well as the rating function within each billing system,” notes Mehok at Verizon Wireless. Ultimately, the company decided the rating for wireless data would be done through a single rater developed in conjunction with Amdocs, its key billing vendor, and billing and bill presentation would be handled through existing billing systems. Since there were no off-the-shelf platforms for 3G environments when Verizon Wireless started developing infrastructure for data services, the company based its solution on the Amdocs Ensemble line and heavily customized it for the Express Network and Get-It-Now products. “We decided integration of the single rater with existing billing systems would translate into faster time to market,” Mehok says, “rather than

e-commerce and bill presentation were all other important components that Verizon Wireless did not want to disrupt. “By replacing just rating, we can leave the voice rating and roaming rating alone and just change the data rating system. That modular approach leads to streamlined integration as next-generation services roll out,” Mehok says.

By upgrading only the one rating module, the work is left to just integrating with existing provisioning, accounts receivable and data warehouses. “Then you affect a smaller subset of your overall IT infrastructure,” he says, “which allows for more focused testing that does not impact other facets of your OSS. That means you can keep implementation costs down.”

If carriers upgrade or replace existing billing systems—which may comprise a full billing, customer care and rating system—they often end up investing

Now, when IP data is received from network switches, the rating engine accumulates kilobyte and rate information according to each customer’s plan. For the moment, Sprint also has launched with a majority of all-you-can-eat, flat-rate plans. “The rating engine has the ability to rate at a kilobyte level, but for purposes of marketing, we are making things as simple as possible for our customers for the moment,” Kinkade says. In the long run, he thinks Sprint PCS will do both flat-rate plans as well as more granular per-kilobyte priced plans for business users and more sophisticated consumer users.

“In terms of high-speed data, we make sure that third-party content downloads are supported by two pieces of billing and rating components,” according to Kinkade. “One has to do with transport, and ensuing per-byte, per-kilobyte, or per-megabyte pricing for transporting data,”

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doing a major overhaul of existing billing systems—systems based on the voice paradigm.”

Most of the integration work took place internally, because multiple billing platforms had come together from the multiple companies that consolidated to form Verizon Wireless.

“The real advantage to having the standalone rating is that it has provided a modular approach to integration, which eliminates the need to swap out or make significant changes in infrastructure each time a carrier launches a new service,” says Mehok. He notes that upgrading rating components now does not affect accounts receivable, bill collection or other billing components.

In terms of overall OSS, rating was just one component; provisioning, collections,

heavily to bring together OSSs using an enterprise application integration (EAI) architecture. That can require expensive modifications and integration efforts.

Sprint PCS

“It’s imperative you have a new rating engine when you move into 3G services,” says Shawn Kinkade, vice president of the strategic projects group at Sprint PCS. “Historical voice rating based on CDRs, and time- and location-based parameters create an entirely different world.”

The type of engine depends on each carrier’s infrastructure and billing systems. “For us it didn’t make sense to extend our existing Convergys billing system; rather, we set up our own engine to work in concert with that Convergys system,” Kinkade explains.

which, he notes, makes mediation and network issues around IP transport the focus. “Second is the content-related issues, which from a rating point of view is not difficult until you get into settlements, where revenue sharing and wholesale considerations have to be taken into account.”

Rating and billing become difficult, since 3G services require that NEs flag particular records for things such as quality of service. “Then you have a hard time finding network components that can do that cleanly,” concedes Kinkade. “The quality is not where we would like it to be.” However, he adds, “I do believe the network manufacturers are working to get this in their plan. They first wanted to get something out there that works for high-speed data access, so now it’s time they

refine it.” Even though “third-generation” wireless data is here, he says, “it’s ‘first-generation’ to architectures in North America. The refinements here will include more billing-specific data, as we continue.”

The Importance of Batch and Real-Time

Real-time analytics, of course, will be paramount with wireless data services. If carriers, for instance, want the ability to make immediate counteroffers, they need to know when customers are getting ready to defect. Also, real-time access to customer profiles will help CSRs resolve problems faster, thus increasing satisfaction, augmenting cross-selling and up-selling opportunities, and reducing churn.

In making those refinements, carriers are focusing on enhancing their mediation and rating systems so they can collect data from NEs in real time or near real time. However, the sheer amount of data involved in mediation and rating of new services can introduce heavy delays. A telecommunications company that generates 350 million CDRs per day, each of which must be inserted into a database, adds just one millisecond to processing for each one. However, that translates into four-plus days of computing time—not very promising to carriers expecting zero latency.

The importance of batch processing should not be lost in the hype. With all the talk in rating around real-time or near-real-time processing, it’s easy to lose sight of what’s truly important: rating engines that can receive CDRs in batch, and rate and process CDRs from intelligent networks and switches, as well as records from IP gateways in real time.

“It doesn’t sound sexy to say I’ve got the best batch rating engine in the world, even though that is still important, as most transactions still get batch processed information,” says Wright at Service Level

Corp. “Rating must handle real-time for next-generation services, but it also still must handle batch data.”

One alternative is to link OSSs using EAI, which can be faster, but expensive to modify when trying to preserve the performance, security and integrity of the systems being integrated.

Bundling Myths

According to Wright, not getting the back end involved early enough continues to cause problems. “Some carriers try to evade rating complexity through giveaways or bundling of products,” he says.

Companies like SBC’s Cingular and Ameritech, which are bundling in an attempt to move customers away from wireline and toward wireless services, could be profitable at first but have trouble down the road. They have to be careful in employing non-usage-based charging techniques to build a market. “You don’t want to create the misconception that bundling means there is no rating necessary for a new service,” Wright says. “If someone buys an average of 1,700 minutes, and uses only 500 minutes, then there is nothing to rate, right? Wrong. There are an increasing amount of surprises for those who believe CLEC claims, for instance, that their bills will be less complicated than those of the ILECs.”

He warns there could be backlash if customers become frustrated when they start to realize what services are missing in their bundles. “If customers have grown accustomed to international phone calls or operator-assisted calls, the initial ease of rating may give way to complexity as soon as the customer does anything that produces one of the 180 or so EMI record types,” Wright says. Bundling wireless and wireline can also become problematic if recording of the service provided is not on the carrier’s network, or even one that is instantly available.

“Then, if someone roams out of that carrier’s territory into another carrier’s territory,” he says, “you need to have those records delivered in at least batch mode.”

Customer Perception

So, in addition to improving the quality of networks, figuring out how to rate based on various parameters and somehow filtering them out from prodigious amounts of data streaming, the next great challenge carriers will face in rating services will be customer perception.

Subscribers are so used to all-you-can-eat wireline, for example, that they don’t understand surfing for a ringer on the Web can significantly add to data consumption. “Customers who download a 10 kilobyte ringer don’t realize that it’s possible to use up as many as 100 kilobytes,” says Sprint PCS’ Kinkade. “Rating then becomes more than an accounting issue. It’s one of getting your customers to ultimately understand consumption, and for carriers to really understand the traffic over the network.”

For now, Sprint PCS, Verizon Wireless and other leaders will concentrate on ensuring that the services delivered match up to customer perceptions. But ultimately customers will have to understand that rich color and robust services are more costly than plain text. “It’s certainly not like Japan, where they were never spoiled by the rich color and all-you-can-eat paradigm set forth in the wireline market. Also, their main Internet access was always through wireless devices, whereas here, most people had access through a PC,” says Kinkade.

If carriers here can somehow show value in what they offer, and carefully rate so as to attract customers without losing too much revenue through all-you-can-eat plans, perhaps the same type of success with wireless data will become evident in the United States. 🌐

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