Operational Models for IP Contact Center Globalization

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Abstract: This paper explores operational models and business benefits where contact center solutions are deployed on IP based networks for immediate and compelling financial return. Globalized IP-based contact center system being proposed in this paper addresses key shortcomings with previous IP solutions to assure system reliability and scalability.

Key-words: IP Contact Centre Globalization, VoIP, IVR, CTI

1 Introduction

Momentum is building in favor of the latest IP-based systems for contact centers that offer compelling advantages over traditional circuit-based ACD switches. By delivering the voice traffic over the IP network (VoIP), the latest systems:

- Simplify networking of multiple, geographically dispersed centers
- Handle phone calls, e-mails, and web contacts on a single platform
- Reduce telephony network costs

By globalizing contact center operations into developing markets, enterprises may maintain or increase contact center quality, while reducing operating expenses by 30% [1-20]. Contact center managers are under extreme pressure to add agent headcount. Some of the reasons include:

- Increasingly complex and longer interactions
- Diminishing returns to self service applications, such as IVR (Interactive Voice Response) and the web
- New customer communications media channels such as e-mail, chat, and web collaboration
- 7 x 24 operating models are fast becoming the norm
- Customer base is increasingly global
- Additional sites for business continuity

These requirements are driving the need for high quality, educated, skilled and retainable talent. At the same time, senior managers are pressuring contact center managers to increase service with no increase in cost. Developing markets can help supply the workforce while offering a 30% operating cost reduction.

Contact center work is shifting from the United States, Western Europe and Japan to developing contact center markets in India, Philippines, Africa, China, the Caribbean, Latin America, and South America [21]. For companies wanting to minimize some of the operational and geopolitical risks of developing markets, there are near shore hedge strategies. For example, Canada and Ireland are near shore options for companies operating in the U.S., while Australia, New Zealand, and Eastern Europe offer near shore opportunities for companies

operating in Western Europe. These near-shore options do not typically offer all of the wage advantages of developing markets, but they do help lower risk in a diversified global portfolio of contact center locations. Typically, the near shore options offer a 10% operating cost advantage as compared to the developing markets advantage of 30%. With the portfolio approach to globalization, a company might move 40% of positions to a developing market, 30% to a near shore country, and the remaining 30% are kept in country [22]. To address the financial risks, there are a variety of business models that support contact center globalization, including wholly owned subsidiaries, outsourcing arrangements, or joint venture operations.

2 Basic Components in the Global IP Contact Center

The fundamental components in an IP based Contact Center include Communication Manager Software, Media Servers, Media Gateways, and Endpoints. These components are also requirements in other IP-based communications applications such as call coverage, call forwarding and messaging for administrative knowledge workers.

- Communication Manager software provides the core intelligence of the contact center system, including the administrative PBX capabilities. The application includes conditional routing (Vectoring), skills based routing (Expert Agent Selection), agent work states (Login, Logout, After Call Work, and Auxiliary Work), advanced agent and work selection (Business Advocate/Dynamic Advocate), and Computer Telephony Integration Application Programming Interfaces such as ASAI (Applications Switch Adjunct Interface), as well as management of announcements, integrated prompting, and queue treatments. This communications software also provides the VoIP gatekeeper functions of registration, admission, and status.
- Media Servers execute the VoIP application software. There is a variety of server operating system options, including Windows 2000, Linux, and Unix. Hardware options include traditional telephony cards, internal blade servers and rack mounted Intel based servers to meet required business needs.
- Media Gateways convert circuit switched voice calls to IP media streams in a gateway. Media Gateways can be traditional cabinets, or rack mounted data type devices. Gateways communicate with the media servers using the ITU H.248 standard.
- Endpoints are either IP based telephones or IP based softphones (PC based software telephony application). In remote agent applications, IP endpoints either work as standalone devices or in conjunction with a media gateway. Wireless IP phones as well as an IP based softphone for Windows CE based Pocket PCs are also options. All IP endpoints currently conform to the ITU H.323 standard; Session Initiation Protocol (SIP) is also supported. For more traditional deployments, circuit switched analog, digital, and ISDN -BRI telephones are also fully supported.

The four components listed above are used in all contact center implementations. Additional supporting applications typically include a Call Management System (CMS) for advanced contact center reporting, the Interaction Center for Computer Telephony Integration (CTI) functionality (i.e. desktop telephony, screen pops, data directed routing) and multimedia routing (email, fax, text chat, and web collaboration), the Predictive Dialing System (outbound contact), the Interactive Response (IVR self service), as well as the Quality Management (interaction recording and evaluation packages) and Workforce Management (forecasting and agent work scheduling) systems. The Communication Manager software, media servers, gateways, and endpoints serve as the core building blocks in all IP contact center solutions.

3 Implementation Models for the IP Contact Center Globalization

We shall explore now three IP contact center technology models which support offshore operating models: IP endpoints, Remote Gateways, and Peer-to-Peer Networking.

IP Endpoints solution option provides centralized contact center functionality. The applications stay in the home country, while IP phones or softphones are deployed in the remote countries. This option follows the Contact Center Utility or Application Service Provider (ASP) model very closely. Agents login remotely to the contact center applications, and they can provide service from anywhere in the world. All applications, call control and signaling is provided from the home country media and application servers. The call is only routed from the home country to the remote destination after the caller and call purpose is identified (through unique DNIS digits - Dialed Number Identification Service, CTI, prompted digits, etc.) and an agent becomes available. The home country contact center infrastructure provides call aggregation, self-service applications, caller identification, and call purpose. In addition, the home country furnishes all queuing, queue treatment, call selection, and agent selection functions. At the remote country location, the only installation setup is for IP telephones and/or IP soft-phones. This option offers the advantages of:

- Lowest cost per seat
- Minimal infrastructure investment offshore
- Simplified contact center reporting — no need for consolidating reports
- Fast deployment of remote locations — very helpful in piloting services
- Very easy set-up for offshore agents providing extended hours of operation
- Centralized adjunct applications, such as reporting, self-service, quality management, CTI, and workforce management
- Minimal support resources at remote sites

Potential disadvantage of this approach is the fact it's 100% dependent on WAN performance and uptime.

This solution is depicted in Figure 1.

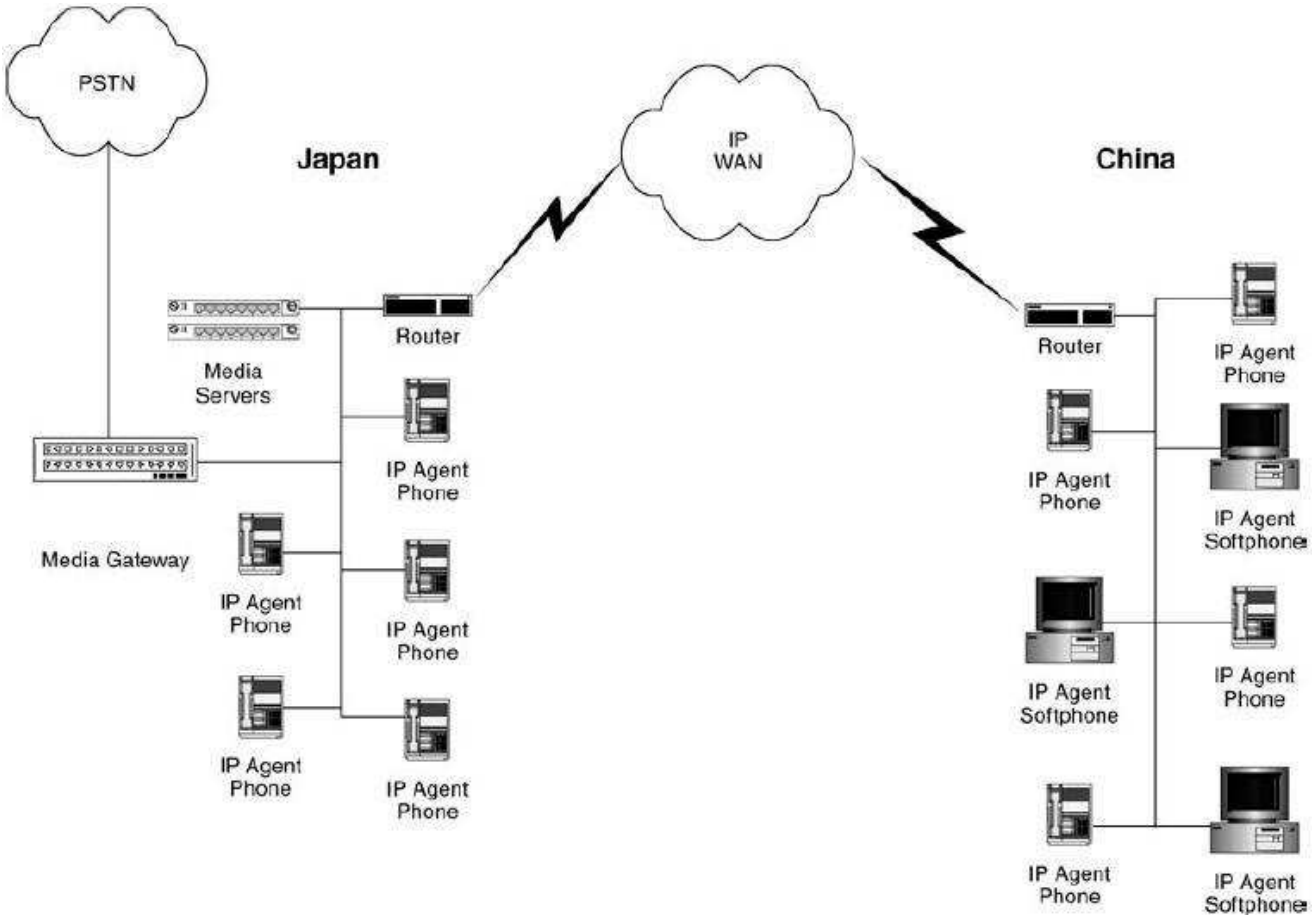

Figure 1. IP End Points

With Remote Gateways option, call processing logic and adjunct applications are centralized in the home country. In country and out of country PSTN trunks directly connect to the media gateways in the remote locations. This adds an additional layer of operating resiliency, as there are now multiple transmission paths on multiple networks connecting to remote agent resources. This configuration also offers optional Local Spare Processor capabilities, allowing operations to continue if there is a loss of gateway to media server communication. When using IP facilities, the call is routed from the home country to the remote destination after the caller and call purpose is identified (through unique DNIS digits, CTI, prompted digits, etc.) and an agent becomes available. The home country contact center performs call aggregation, self-service applications, caller identification, call purpose, as well as all queuing, queue treatment, call selection, and agent selection functions. When using circuit switched facilities, the caller queues on the remote gateway. As an option, a compression multiplexer may be used to gain additional throughput.

Advantages of this implementation model include:

- Relatively low cost option
- Simplified contact center reporting—no need for consolidating reports
- Calls can be sent directly from the home country Public Switched Telephony Network (PSTN) and local country PSTN to the remote gateways—adding to operational flexibility and resiliency
- Local Survivability Potential disadvantages to this model include:
- Adds a layer of network and application infrastructure complexity

This solution is depicted in Figure 2.

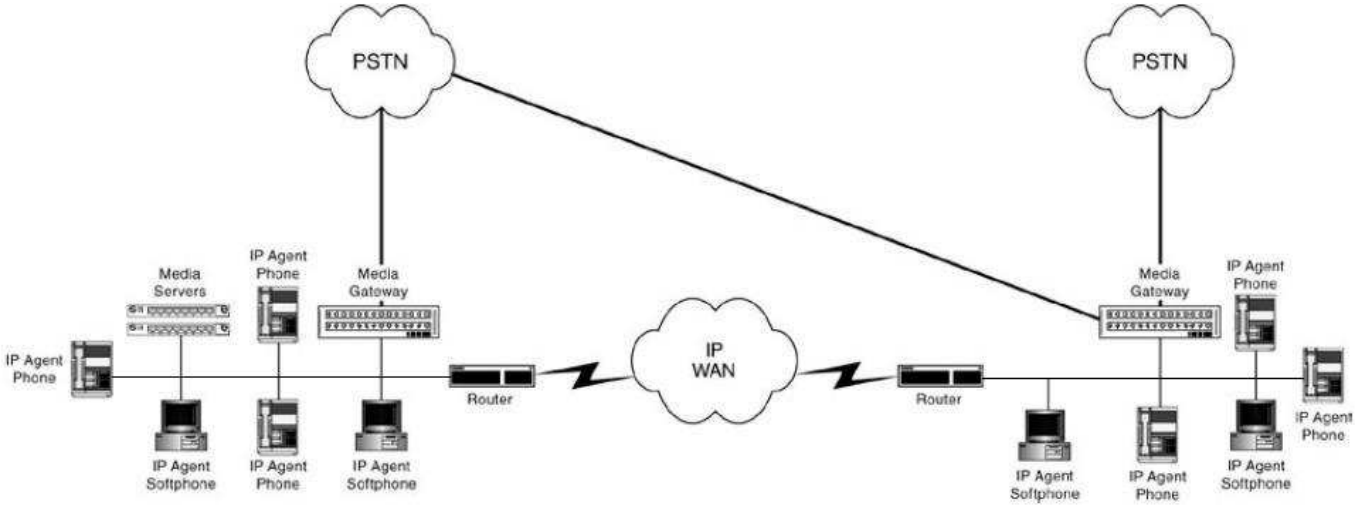

Figure 2. Remote Media Gateways

With Peer-to-Peer option, call processing is distributed globally to each contact center location. Contact centers can be logically grouped, and then multi-site Best Service Routing (BSR) logic predictively balances the traffic load across the IP WAN. A set of media servers and media gateways are located at each remote location. With this technology model, the home country application infrastructure provides identification of the caller and the call purpose (through unique DNIS digits, CTI, prompted digits, etc.). After the identification, intelligent polling is applied to make the best decision in real time. If there is an agent surplus, the most qualified agent among all distributed centers is selected. Conversely, if there is a global call surplus (calls are queued), the call is routed to the center with the shortest expected wait time. The home country contact center performs call aggregation, self service, caller identification, and call purpose, while the remote location performs all queuing, queue treatment, call selection, and agent selection. Agents login to the remote contact center infrastructure.

Advantages of this implementation model include:

- Redundant, survivable call processing supports crucial business continuity.
- Massive scalability: supports tens of thousands of agents
- Calls can be processed directly from the home country PSTN and local country PSTN — adding to resiliency and operational flexibility
- Increased reliability because agent registration for services is reliant on LAN infrastructure — tends to be more reliable than WAN infrastructure

Potential disadvantages to this model include:

- Highest cost option
- Reporting needs to be consolidated across sites
- Regional support staff will most likely be required
- Most system administration intensive option
- System administration is required at each location. This topology is depicted in Figure 3.

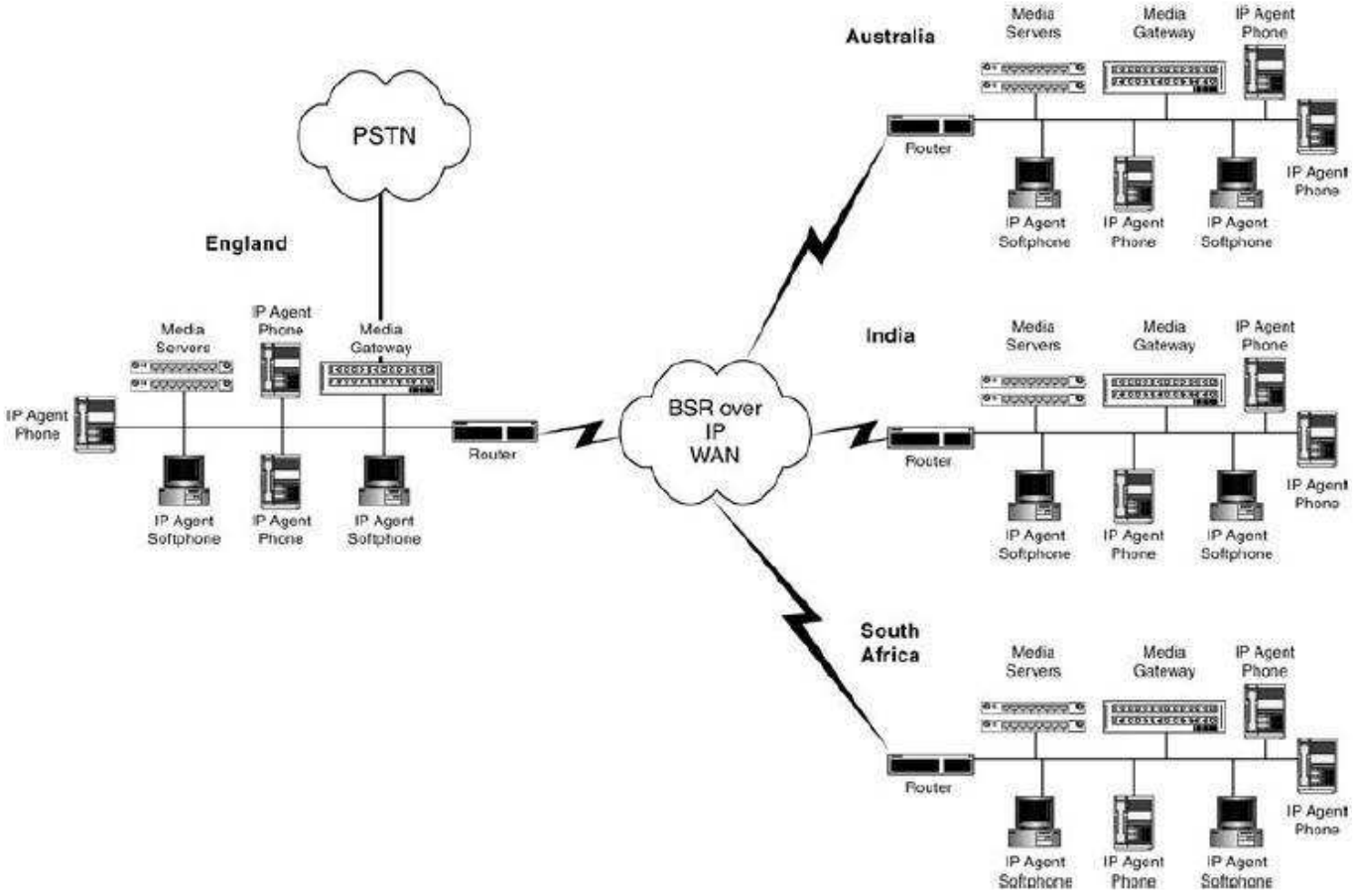

Figure 3. Peer-to-Peer Option

Considering the five-site enterprise case study (an enterprise with five contact centers operating each location independently - each location has its own contact center management and technology management team), let's assume that three additional contact center sites are added to support a major business expansion. Because the business is under heavy scrutiny from the financial markets, senior management decides to globalize the contact center operations in three separate markets to hedge operational risks while also gaining the benefits of a quality workforce at reduced costs. The expansion takes place in Canada, the Philippines, and India. Because most of Canada operates in the same time zones as the United States, the Canadian agents are blended with the U.S. agents to enhance regular day

business coverage between 8 AM and 5 PM. The Canadian site is enabled via remote IP phones as the company's long distance carrier has redundant fiber in Canada and a history of delivering quality, high availability network services. For second and third shift coverage of general customer service, the business decides to operate in the Philippines because of the large population of English speaking agents. For the Philippines contact center, remote gateways are chosen to add a layer of resiliency to insure against short-term WAN outages. For outbound services such as credit, collections, and telemarketing, as well as the inbound IT helpdesk, the business decides to expand in India because India offers the advantage of large pools of university graduates educated in business administration and computer science. To enable the India operation, a second instance of Communication Manager is implemented for massive scalability as well as the business continuity technology site for the Philippines center.

Across all eight sites, contact center management has 100% visibility into all contact center operations. A consistent Quality Management program is implemented across all sites, and workforce requirements are forecasted globally, while the scheduling for the staffing requirement is handled locally. Load balancing is performed in real time between the two U.S. based centers and India in real time. The right customer gets connected to the right agent at the right time — 100% independent of agent location. The eight-site deployment is represented in Figure 4.

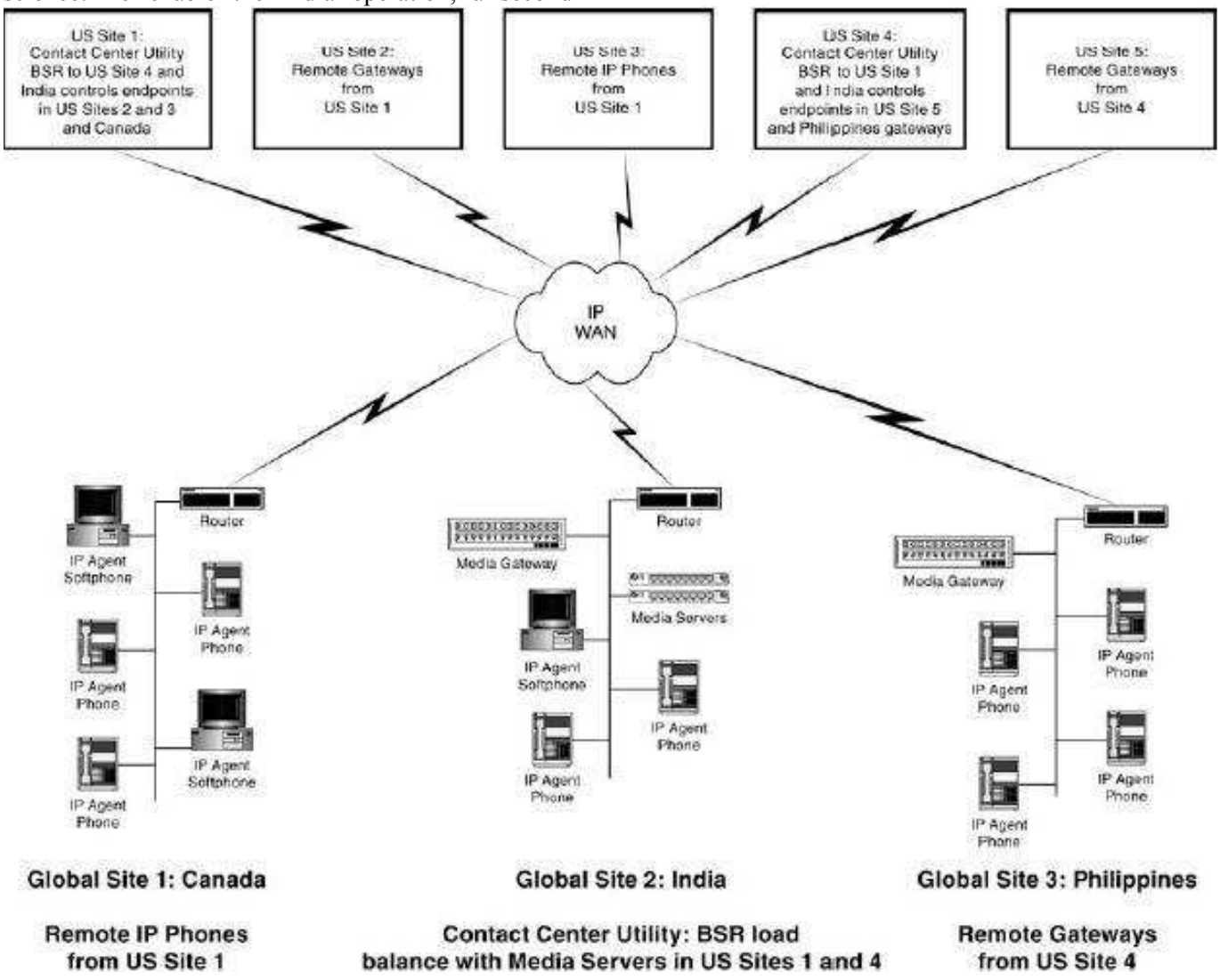

Figure 4. Global Contact Center Deployment Example

4 Conclusion

VoIP is ready for widespread production deployment in the contact center. The technology has been through several development cycles, and reliability and quality has been engineered into the current generation of products. The real question is not 'should I purchase an IP-based system', but rather, 'which IP-based system should I purchase.' The latest generation of systems with distributed architectures may finally bring everything together in one platform for managing multiple sites and multiple media types [23]. Proposed operational models for IP contact centers globalization offers a continuum of solutions, all with massive scalability, for the business advantage.

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