



WHITE PAPER

2ND GENERATION
PRESENCE MANAGEMENT

BY

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Introduction: the Role of Presence

Presence is not a new idea for communications, but it is an idea whose time has come.

Already thirty years ago Automatic Call Distributors were keeping track of agent states for routing and reporting purposes--but only in the rigid call center environment. It took Instant Messaging to give ordinary business users a notion of state--or presence--so others could see if they were available for conversation. There is now a whole category of products called "Communication Dashboards" that exist to display presence of people you might want to contact. But the significance of presence goes much farther.

Presence has the potential now to be applied to people, to any aspect of a job, or to business processes in general. Presence can help individuals manage their work environments, and it can enable businesses to make sure that important events are foreseen and handled. It creates the opportunity for functional improvements throughout an organization, giving both individuals and enterprises a new ability to get things done.

Our goal in this paper is to move the discussion of presence beyond the theory of what might be and also beyond the limitations of first-generation systems, so that the value and impact of presence can start to become clear.

1st-generation presence: Dashboards and IM state

Today there is industry-wide consensus about the importance and scope of presence, but most products are still first-generation add-ons to existing systems.

Presence today appears first of all in Instant Messages systems: the public ones (AOL, MSN, Yahoo) as well as the enterprise versions (from Microsoft, Apple, and others). PBX vendors (e.g. Siemens, Nortel, Avaya) have also entered the picture with Communications Dashboards, typically added to their Unified Communication products, that provide the same sort of presence data for PBX users. Many of these systems also have a notion of groups, with group presence that represents a rollup of the presence of the individual group members.

In all of these systems however the role of presence is largely passive: providing information for a user to check in establishing voice, video, or IM sessions (possibly in association with collaborative tools). For the PBX products in particular—the call processing in the PBX remains unchanged; the user just has some additional data to work with. Even a very sophisticated product such as Siemens OpenScape, is quite limited in the way it can react to presence events.

2nd-generation presence: Using Presence for the Business

Where first-generation presence systems are passive, second-generation presence systems are active, using the presence information to help the business process. Moreover to reach this goal, second-generation presence systems work not just with IM-style states but with customizable states reflecting real work of the business. With all of this, as we shall see, second-generation systems can fundamentally change what a telecommunication system means to its users and to the business overall.

As an important example, second-generation presence makes it possible to address the comprehensive needs of a major new communications market segment: the Intelligent Communications Market (Figure 1).

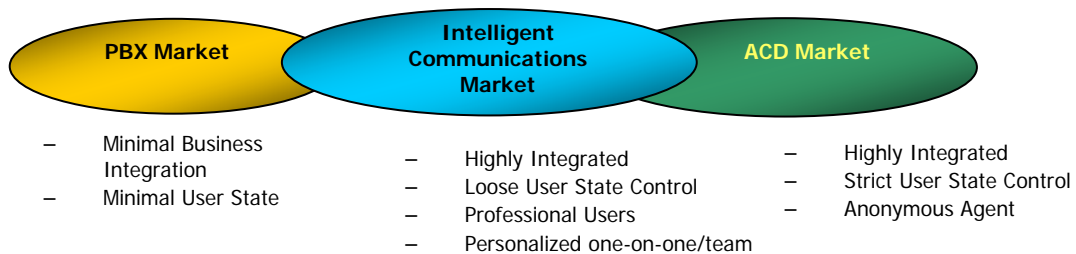


Figure 1

The typical user in the Intelligent Communications Market is a business professional with a high degree of communication needs, incoming or outgoing. At the basis what he requires from a communications system (and is missing today) is control over his communications environment, so that he knows what needs to happen and can communicate without hassle and according to his and the company's priorities. Additionally, for the business what is needed is an understanding of the user's capabilities and corporate role, so that the communication system can support what he is doing. In particular the communication system needs to respond to business events—new orders, deadlines, customer issues—so that important work is translated directly into manageable action.

For this class of user, traditional telecommunications systems have had little to offer beyond PBX dialtone. Even with first-generation presence, all that is added is a way to check who might answer before dialing. With second-generation presence, however, there is a real opportunity to change the work environment for the better. Four key concepts are [PendingCommunications™ features](#), [Enterprise Services and Skills](#), [Reporting and Service Levels](#) and very significantly, [Business Process Integration](#). To explain these items and their

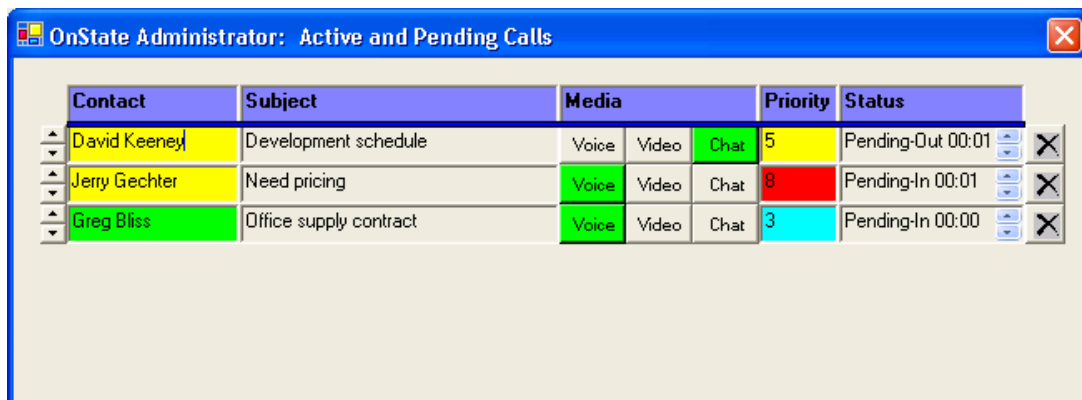
impact, we examine each one in the context of OnState's second-generation presence management system—the Intelligent Communications Server or ICS.

PendingCommunications™ Features

PendingCommunications features demonstrate how a second-generation presence system can give users visibility and control of communication.

As a fundamental capability, the ICS handles not only calls as they occur, but also calls that are waiting to happen in the enterprise. For example, if a user's call does not complete, the user can tell the system to make it a "pending call," i.e. a call that will complete when both the origination and destination users are both available to take it. Pending calls are visible to both parties and can be managed individually. In this way, with PendingCommunications features, a call that does not complete, becomes the system's—not the user's—responsibility.

Figure 2 shows a sample user screen with three pending calls listed. The figure shows three calls waiting to be completed for the OnState Administrator (identified on the caption of the Window). The first of these was made by the OnState Administrator himself ("Pending-Out") and the other two are incoming. For each of these, the screen shows the name of the other party, as well as the subject, media, and priority assigned to the call. The priority shown on the screen is the priority assigned by the originator.



Contact	Subject	Media	Priority	Status
David Keeney	Development schedule	Voice Video Chat	5	Pending-Out 00:01
Jerry Gechter	Need pricing	Voice Video Chat	8	Pending-In 00:01
Greg Bliss	Office supply contract	Voice Video Chat	3	Pending-In 00:00

- User orders calls to match his priorities
- Calls trigger one-by-one on mutual availability
- Web-service accessible

Figure 2

Pending calls represent individual, user queues in the enterprise. Users can reorder pending calls to reflect their own priorities—when a user indicates he is available, the highest-ordered call that can complete (based on mutual availability) is the one that will trigger. Pending calls that can complete are handled before the user appears available to the outside world. This is important to give the user visibility and control of his environment.

User's can also redirect incoming pending calls, with editing of the subject field, so that others can be delegated to take them. Users can also change the selected media, or rewrite the subject field, for example to give the caller additional information about the transaction. Individual pending calls can be temporarily "inactive," i.e. unable to trigger until the calls are reactivated. Calls can also be deleted by either party.

While pending calls trigger one-at-a-time, it is up to the user to decide how many calls he wants to handle at once—he can make himself available at any time and take another call. IM chat calls, together with other held and active voice or video calls may appear as pending calls. As noted in the media section, any call can be changed to any medium, and call control features apply uniformly across media.

Pending calls can be directed not only to individual users, but also to enterprise services and skill groups, as discussed below. Further, pending calls can be created and managed by web services. With web services integration, communications can be initiated and managed by web pages or interactive voice response systems (IVR's), as well as driven by applications such Customer Relationship Management (CRM) systems.

PendingCommunications features demonstrate several key characteristics of the ICS system:

1. Users have visibility and control of their communications in the enterprise
2. Businesses can manage communications activities in a simple way—by web services applied to enterprise queues.
3. Interfacing to business processes is simplified: calls can be created by web services, regardless of the availability of individual users, and managed and prioritized by web services applied to the enterprise queues.

For businesses with today's Services-Oriented Architectures, this means that the ICS enables telecommunications to be a full participant in a way that is simply not possible otherwise.

Enterprise Services and Skills

For the ICS, a Service is any corporate function that a caller (internal or external) may want to access. Skill Groups are defined implicitly according to any skills and proficiency levels that users may be defined to have.

Within the scripting environment of the ICS, it is simple to set up a Service to be handled by Skill Groups defined by arbitrary combinations of skills and proficiencies. Further, if a call does not complete, it can be handled by PendingCommunication with the SkillGroup or Service as destination—i.e. it will be handled when there is an available user with appropriate skills and the caller is also available. As noted above, priorities of waiting calls can be adjusted either manually or programmatically to suit business objectives.

With these notions of Services and Skills, it becomes straightforward for enterprises to define communication coverage in terms of organizational responsibilities and areas of expertise. It is particularly important that the use of skills is completely flexible, so that one organization's view of coverage puts no constraint on what another organization might choose to do.

The tie-in with the pending call mechanism is also important. There is no requirement for a fixed number of users to be present and available to handle coverage, and users who are available do not risk becoming overwhelmed with new responsibilities. All parties have visibility into the queues, so that the calls can be handled appropriately.

Reporting and Service Level

The ICS provides detailed call-level reporting, augmented by a new broadened concept of Service Level.

The call level reporting provides records of all stages of call processing, with individual and group reports of call activity in all media.

In addition, for all of the enterprise queuing activities just described—i.e. for individuals, services, and skill groups—the ICS records waiting time until call completion. This means that at both an individual and a business level, responsiveness becomes quantifiable and manageable. This can be important in areas where statistical information was previously unavailable, e.g. support for remote workers, availability of sales support, and effectiveness of organizational coverage.

This information can be presented as a classical Service Level, i.e. a percentage of calls, of given type handled, within a target interval.

Business Process Integration

Business process integration in the ICS occurs in two primary ways:

1. Call creation and management via the web services interfaces
2. Trigger points based on business state events

The first example was [discussed](#) in association with the PendingCommunications features. As an example, a system that tracks customer issues can place a call in an appropriate queue for a user or a corporate service that handles customer problems. This uses the web services for call creation and management and benefits from the PendingCommunications framework, in that the business application does not need to figure out what to do if a particular target user is not currently available.

The second example makes use of an additional level of functionality. State handling in the ICS is highly configurable to cover business-specific states to be tracked by ICS call processing. For this case, business states are defined in the ICS system, as well as trigger points associated with those states. The business process in this case communicates state information—again by web service—to the ICS. Communication events are then triggered by the ICS based on the business states.

As an example, a business state could be geographic location of a train, and a trigger point could be proximity to a loading dock. The system would trigger notification of crew members and crew transport services so that the train could be unloaded on arrival. The advantage is that the business application does not need to program the state processing necessary to determine the trigger event—this is done with minimal configuration on the ICS side.

For the ICS state event triggers can be essentially anything:

- Values of states
- Combinations of states (e.g. train location + time of day + crew location)
- Repetitions of states or time in states
- Anything else in the system (total calls, number of calls at a location, etc.)

Based on the triggers, essentially any type of real-time or asynchronous communications event can occur. The ICS can also provide asynchronous notifications back to the business process using the SIP/SIMPLE or anything else that is desired.

Second-Generation Presence and Standards

Presence has been closely associated with the SIP/SIMPLE standardization process within the IETF SIP working group. This activity has grown out of the use of presence in Instant Messaging and is a very beneficial attempt to standardize the communication of presence in the industry. OnState is a strong advocate of SIP, supports SIP protocols natively throughout the product line, implements SIP/SIMPLE for both sending and receiving of state.

However, for state management neither SIP/SIMPLE nor any other standard can be the end of the story. There is and will continue to be a lot of important but unstandardized state information in the world. So for a second-generation presence system, standards support must be augmented with an ability to use whatever state information is available. Specifically, the requirement should be

- Support all relevant standards for presence
- Support for application interworking standards such as web services
- Facilities to adapt readily to any other state data as required by customers. For the ICS this is expressed by the flexibility of the state model and by design considerations within the system control.

Summary and Conclusion

There is general agreement in the industry today about the importance of presence for the efficiency of business communication and of business processes in general. For the time being, however, most products represent a first generation of development with limited goals. In this paper we have attempted to go beyond first-generation presence to show by example what presence can mean. The following chart summarizes our examples and why, already with the second generation of products, presence is poised to change the workplace fundamentally and for the better.

1st Generation Presence

- Focus on User to User communication
- Use Presence to "see" if someone is available
- Aggregate Devices i.e. IM, VoIP, Video, Wireless
- Converged Common Platform or Dashboard

2nd Generation Presence

- Focus on Presence Events driving Communication Services
- PendingCommunications features
- Enterprise Services and Skills Routing
- Reporting with Service Levels
- Business Process Integration