

## Annex 1 Capacity

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Capacity requirements and definitions are fundamental to the design and development of specifications, standards, and the equipment needed to implement and support those specifications and standards. The following considerations, pivotal to the design process, are examples of the types of decisions that are affected by the choice of capacity requirements and definitions:

- To implement these standards in hardware and software internal to existing architecture or to add external equipment and devices,
- To use analog or digital interface methods,
- To buffer data on disk or in RAM, and
- To use an existing processor or upgrade to a processor capable of much higher computing power.

Since no official capacity notice was available and in order to move forward in developing these standards, PCIA had to make certain assumptions about capacity requirements and definitions. These assumptions are described below and are not a part of this standard.

PCIA bases the offered capacity assumptions on many years of industry experience working with LEAs as well as actual historical numbers published in the annual report<sup>1</sup> by the Administrative Office of the U.S. Courts. However, in the event that the formal capacity requirements and definitions are significantly different from those offered below, substantial modifications to the specifications and standards will be required and design and development work in process on the equipment needed to implement and support those specifications and standards may be lost.

The CALEA Suite of Standards for Traditional Paging, Advanced Messaging, and Ancillary Services is built upon the following historical PSP demographics and recommendation for capacity requirements.

### A1 1 Historical PSP Demographics

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Unlike cellular and broadband PCS, traditional paging licenses were not based on geopolitical boundaries. These systems are a group of licenses for individual transmitters, operated together to serve a perceived community of interest. Currently, geopolitical areas of any kind have little meaning to 95% of the PSPs. Within a specified geographic area, the number of PSPs may range from one to several hundred. In fact, high concentrations of population tend to mean many opportunities for sales of pagers and translate to multiple PSPs with large numbers of subscribers and/or a large number of PSPs to serve the population. Traditional paging is a very competitive business that tends to spawn PSPs.

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<sup>1</sup> Annual Report of the Director of the Administrative Office of the United States Courts on Applications for Orders Authorizing or Approving the Interception of Wire, Oral, or Electronic Communications: January 1 through December 31, 1997 (released April, 1998)

Since PSPs cover a broad range of geography (from local communities to nationwide), services (from traditional paging to ancillary), and quantities of subscribers (from a few hundred to millions), the most meaningful expression of capacity would be one that specified a percentage of the total subscribers on a given service (e.g., traditional paging, advanced messaging) within a given PSP that must be available for simultaneous surveillance. Such a simple expression of capacity would automatically scale for any size PSP and any geographical area. It would also cause the PSP's technical capability electronic surveillance to grow and the LEA's capabilities to scale to accommodate differences in the sheer number of PSPs and subscribers as the number of subscribers for a specific service grows over time. If capacity were expressed as a percentage of subscribers on a service within a PSP, an increase in subscriber concentrations on that service would automatically translate into the need to expand the PSP's and LEA's intercept capabilities.

## A1 2 Recommendation for Capacity Requirements

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PCIA recommends a capacity requirement be promulgated based on a single percentage of subscribers on each service that is offered by a PSP. This percentage should be based in part on the number of lawful authorizations for paging interception in the United States in a given year (as identified in the A.O. annual report) divided by the total number of subscribers in the United States for that same year. For example, in 1997 there were approximately 289 pager-related wiretaps reported and approximately 40,000,000 pager subscribers or a percentage of .0007225%. For simplicity, this percentage will be rounded to 0.001%.

We realize that the A.O. Report's statistics are of the annual number of wiretaps, not the number of simultaneous wiretaps. Using these numbers, therefore, overstates the number of simultaneous wiretaps by approximately an order of magnitude. However, this approximate order of magnitude difference should more than compensate for such factors as:

- lawful authorizations are not spread evenly across the country and
- the number of wiretaps as a percentage of subscribers may increase over time.

For new or underutilized services (e.g., Ancillary Services) for which no specific numbers are available from the A.O. Report, PCIA would propose a capacity requirement of one (1) simultaneous intercept, until such time as specific numbers are available that demonstrate the need for a higher capacity. This assumption should not underestimate law enforcement's requirements but, in fact, should more than satisfy law enforcement's needs. For example, even the largest PSP systems today have fewer than 10,000 subscribers with ancillary services.

Given the percentage of 0.001% and a particular PSP offering five services consisting of:

- Traditional Paging with 1,250,000 subscribers,
- Advanced Messaging two-way data service with 180,000 subscribers,
- Advanced Messaging acknowledged voice with 80,000 subscribers,
- Ancillary Services outdial with 600 subscribers, and
- Ancillary Services caller/subscriber bridging with 900 subscribers,

the PSP would be required to provide the capacity to simultaneously monitor:

- 13 Traditional Paging Intercepts  
[1,250,000 traditional paging subscribers x 0.001% = 12.5],
- 3 Advanced Messaging Intercepts  
[((180,000 two-way data subscribers x 0.001%) + (80,000 two-way voice subscribers x 0.001%)) = (1.8 + 0.8) = 2.6], and
- 1 Ancillary Services Intercepts  
[((600 outdial subscribers x 0.001%) + (900 caller/subscriber bridging subscribers x 0.001%)) = (0.006 + 0.009) = 0.015]

With capacity specified in this way, the geographic service area is immaterial. The result is the same if the service area is the United States or if it is a small part of metropolitan area. This implementation of surveillance capacity is flexible and can adjust to the system design and service offerings of each PSP.

## A1 3 Advantages

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There are several advantages to these capacity assumptions.

- 1) If a shift from Traditional Paging to some form of Advanced Messaging were to occur, the capacity requirements would scale according to the number of subscribers on that service at any point in time.
- 2) As new services are introduced, surveillance capacities will be established in proportion to their rate of adoption with minimal additional work by authorities.
- 3) The capacity requirements are simple and easily understood by all members of the PSP and LEA communities.
- 4) It accommodates all types of PSPs with all kinds of services and all sizes of service areas.



## References

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CALEA Suite of Standards for Traditional Paging, Advanced Messaging, and Ancillary Services, v1.3, 24 May, 2000 ([http://www.pcia.com/calea\\_specs\\_v1p3.zip](http://www.pcia.com/calea_specs_v1p3.zip))

CALEA Standard for Traditional Paging, v1.3, 24 May, 2000  
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(<http://www.uscourts.gov/wiretap/contents.html>)



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