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APPENDIX B
UNIQUE CLASSIFIED UNIFIED CAPABILITY

Figure B-1, Classified VoIP Network Design Illustration, illustrates the classified Voice over Internet Protocol (IP) (VoIP) design. The approved product types are the same as the Sensitive but Unclassified (SBU) approved product types with the exception of the Softswitch (SS), which is not needed for classified VoIP and is replaced with a dual-signaling Wide Area Network (WAN) SS capable of both H.323 and Assured Services (AS) Session Initiation Protocol (SIP) (AS-SIP) signaling, described in Unified Capabilities Requirements (UCR) 2013, Appendix B, Unique Classified Unified Capability.

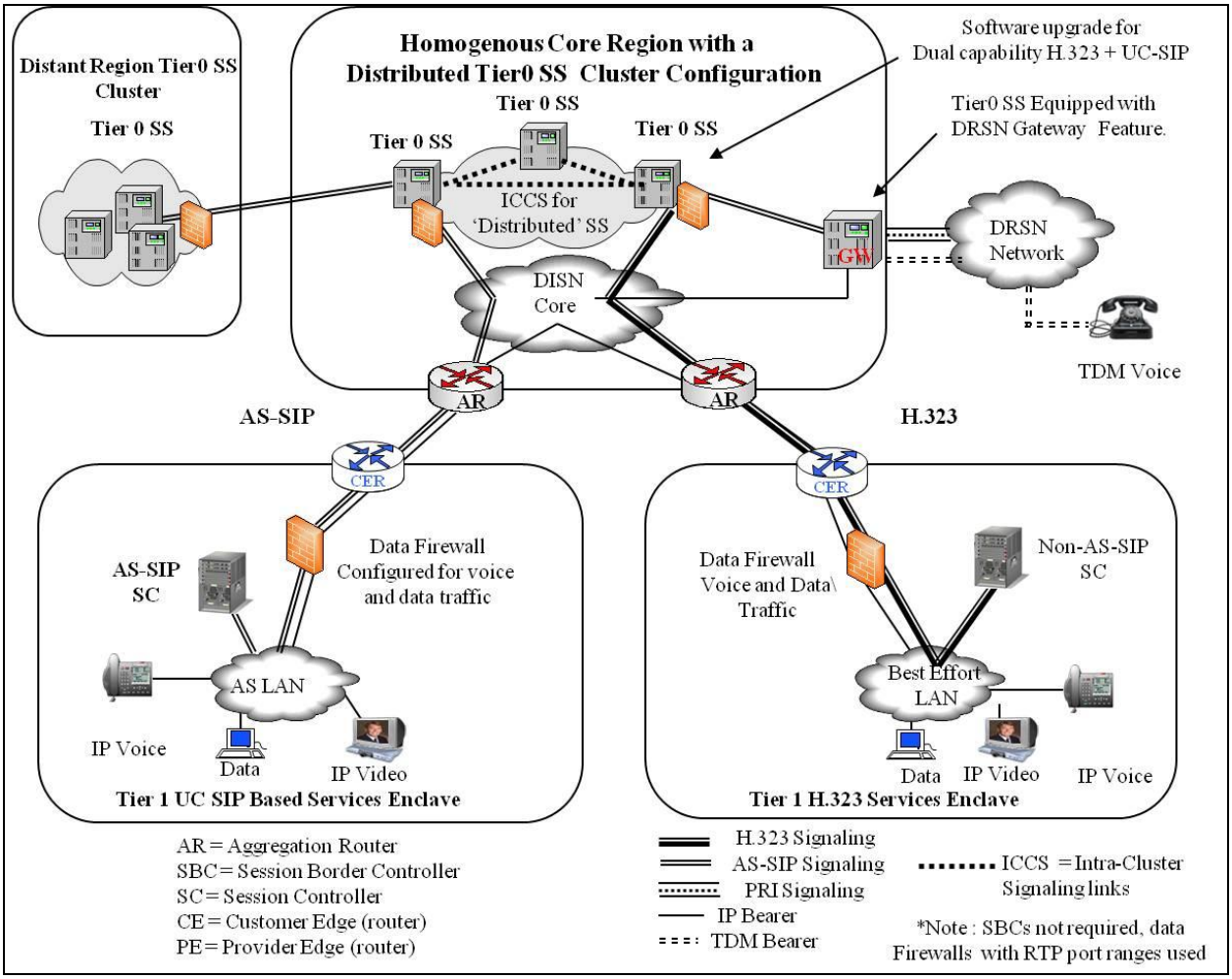

Figure B-1. DISN CVVoIP Hybrid Signaling Design

B.1 SIGNALING DESIGN

The signaling design has to provide both backward and forward technology capabilities. Thus, Channel Associated Signaling (CAS) and Primary Rate Interface (PRI) in the Defense RED Switch Network (DRSN) have to interoperate with H.323 signaling in the current Classified

Voice and Video over IP (CVVoIP) network to be followed by H.323 and AS-SIP interoperating in CVVoIP until all IP services are via AS-SIP. Once that is achieved, the DRSN interoperability must be maintained until its features can be replicated with IP technologies.

The hybrid CVVoIP signaling design is depicted in Figure B-1, DISN CVVoIP Hybrid Signaling Design.

The hybrid signaling design is constructed as a two-tier hierarchy consisting of a "local" level and a "backbone" level. At the local level, Session Controllers (SCs) are located in secure enclaves and represent the level of the signaling hierarchy closest to the End Instruments (EIs). The local level is based on a multivendor assortment of SCs. The backbone, or Tier0 signaling, level is a robust, homogeneous design based on current vendor-unique geographic cluster arrangements of Tier0 SS. The CVVoIP assured services signaling backbone will be based on the Tier0 SS cluster concept, with AS-SIP as the CVVoIP signaling method, but, during the transition period to AS-SIP-based CVVoIP, there will be segments using H.323 signaling also. Signaling interoperability between H.323 and AS-SIP will be achieved by an Approved Products List (APL) product called a Dual-Signaling Softswitch (DSSS).

The backbone Tier0 SSs represent the upper level of the signaling hierarchy and provide inter-enclave as well as inter-geographical area signaling forwarding. Some of the SCs as well as a select few Tier0 SSs provide "Managed Services" to a limited set of EIs; therefore, a Tier0 SS may have an SC function associated with it as well.

Every SC is assigned to a primary Tier0 SS and to at least one secondary Tier0 SS for automatic failover.

A Tier0 geographic cluster typically consists of at least three Tier0 SSs. The clustered SSs are connected by Intra-Cluster Communication Signaling (ICCS) links, and they automatically update each other's databases, as required, in response to configuration changes within the geographic region controlled by the cluster and, as such, can be viewed as a distributed SS. This feature provides an extremely robust Tier0 signaling design enabling automatic non-service interrupting failover in case a Tier0 SS goes down. The distance between the clustered SSs must be planned so that the maximum round-trip time (RTT) between the clustered SSs does not exceed 40 ms. Based on a propagation delay of 6 microseconds per kilometer without any other network delays being considered, this translates to a maximum theoretical transmission distance of approximately 1860 miles.

B.2 DIRECTORY (WHITE PAGES) SERVICES

The CVVoIP will have a directory services capability for searching "white pages" that allows subscribers to look up specific and applicable user information assigned to other CVVoIP subscribers. Requirements for CVVoIP Directory Services are found in Section 3.2, Directory Services ("White Pages"), for consideration by SC/SS product development teams. Systems providing CVVoIP Directory Services must be dedicated to CVVoIP and cannot also provide SBU Directory Services.