

1 **6**

2 **6.1**

3 **6.2 High Level Requirements**

4 **6.2.1 CESE to ESNNet Network Requirements**

5 PMI.Network.0100-0100 The CESE shall support TCP/IP network interfaces to an RG  
6 over a minimum 56Kbps capable physical network connection when  
7 transporting an information body containing XML ALI tagged data of nominal  
8 length (<800 bytes according to NENA 02-010) plus the CESE header and  
9 protocol fields (total message length estimated to be <1000 bytes).

10 Rationale: It is assumed that this interface will require a minimum transport layer  
11 transport speed and is not supported over existing legacy asynchronous  
12 1200/9600 bps links. More advanced transport speeds are expected to be  
13 required as additional information sources, services, and interaction models  
14 are introduced to the PSAP. The number of call taker positions supported per  
15 ALI retrieval submittal rate and ALI response model (wireless can lead to  
16 multiple responses) will ultimately lead to situational dependent engineering  
17 analysis of required transport bandwidth.

18 PMI.Network.0200-0100 The CESE shall be designated as the TCP/IP client and the RG  
19 shall be the TCP/IP server

20 Rationale: It is the responsibility of the CESE to initiate the connection to the RG at the  
21 transport level. At the application level the CESE and the RG operate as peers  
22 since messages are initiated from either one.

23 PMI.Network.0300-0100 The PMI must allow redundant physical transport routes. The  
24 network interface between the PSAP and the RG must be designed to  
25 withstand multiple failures by incorporating redundant physical routes to  
26 ensure reliability.

27 Rationale: The network should be designed with redundant facilities to assure that  
28 there is no single point of failure.

29 PMI.Network.0400-0100 While initial implementations may only incorporate text  
30 transmission between the CESE and RG, the PMI and the corresponding  
31 network shall be capable of supporting the transmission of images, video, high  
32 resolution graphics, voice, and other capabilities through the same channel or  
33 additional channels.

1           Rationale:    For many services simple transmission of text is sufficient. However, one of  
2                            the significant advantages of this architectural concept is the opportunity to  
3                            offer services that extend the communication to all types of media. If the  
4                            minimum rate, i.e. 56kbs, is deployed these higher bandwidth services will be  
5                            severely limited.

6           PMI.Network.0500-0100   Connections between the CESE and RG shall be secured  
7                            TCP/IP socket connections such that advanced authentication and security  
8                            features can be implemented.

9           Rationale:    TCP/IP sockets allow managed and monitored point to point application  
10                           level transport. Such techniques easily extend to support strong  
11                           authentication, server authentication, and content encryption. TCP/IP sockets  
12                           can be established and maintained over a relative long period of time, thus,  
13                           spreading the overhead of establishing and authenticating the connection over  
14                           a period of time.

## 15   **6.2.2 Protocol Framework**

16           PMI.Protocol.0100-0100   The CESE shall identify its initial ESNNet element using logical  
17                           names and naming services with standard Internet Protocol elements such as  
18                           DNS.

19           Rationale:    Using standard Internet Protocol techniques will allow CESE to easily and  
20                           quickly identify available network elements to begin initialization.

21           PMI.Protocol.0200-0100   The CESE shall connect to a given RG via mechanisms that  
22                           allow load balancing of CESE connections across the available RGs.

23           Rationale:    The network implements algorithms to assure efficient use of the network  
24                           capacity and network elements. This will assure that load can be distributed  
25                           across the network and among the physical network elements.

26           PMI.Protocol.0300-0100   The PMI shall support mechanisms to ensure constant  
27                           monitoring of the communication capability between a given CESE and the  
28                           overall ESNNet.

29           Rationale:    Facilities must be monitored to ensure availability and proper functioning.  
30                           No failure or lack of communication capability should wait to be detected upon  
31                           an attempt to fulfill an emergency service event.

32           PMI.Protocol.0400-0100   The PMI shall support mechanisms to negotiate appropriate  
33                           connections from a specific CESE to a RG using session parameters including  
34                           PMI version number and shall use standard IP techniques such as Session  
35                           Initiation Protocol (SIP).

1           Rationale:     Mechanisms to support upgrading the PMI within a production environment  
2                           and managing compatibilities is vital. An infrastructure that allows appropriate  
3                           negotiation of connections will be extensible to other scenarios.

4           PMI.Protocol.0500-0100 The PMI must allow each entity (CESE and RG) to identify its  
5                           PMI implementation version during connection initialization to allow interacting  
6                           components to verify compatibility of their message sets.

7           Rationale:     Capabilities should be put into the message set to accommodate the  
8                           identification of supported versions of the protocol between two end points.  
9                           This will allow the CESE or RG to revert back to a compatible version or reject  
10                          incompatible partners. These primitives should facilitate a smoother migration  
11                          as we evolve the services made available to PSAPs and other emergency  
12                          service providers.

13          PMI.Protocol.0600-0100 The PMI behavior rules must specify that if incompatible  
14                           message sets are determined, the components shall either adjust behavior  
15                           appropriately or shall reject interaction between incompatible versions.

16          Rationale:     Components can be upgraded without affecting service availability. They  
17                           can also detect components which are no longer supported and could cause  
18                           faults in the overall ESNNet infrastructure.

19          PMI.Protocol.0700-0100 When initializing, a CESE shall connect to one (and only one)  
20                           of the available RGs. A CESE will have connections to two RGs when it is  
21                           transitioning its connection from one RG to another. When transferring its  
22                           connection, a CESE will notify the original RG such that the transition can be  
23                           performed gracefully and constant link monitoring responsibilities can be  
24                           transitioned to the second RG.

25          Rationale:     Dual physical or logical connections between the CESE and RGs are not  
26                           required given modern transport networks and application protocols. In fact,  
27                           reliability can be increased and significant complexity can be eliminated.  
28                           Modern TCP/IP protocol and transport reliably delivers messages. The  
29                           connection model and PMI support constructs for notification and  
30                           management of switching RG connections can be utilized to supplement  
31                           availability, establish an addressable communications strategy, and implement  
32                           an error detection and connection monitoring strategy between a given CESE  
33                           and ESNNet.

34          PMI.Protocol.0800-0100 Facilities and algorithms used in failure and recovery  
35                           situations shall be constantly exercised to ensure they are operating properly.

36          Rationale:     Capabilities used to restore service or work around faults should not wait for  
37                           a problem situation before being exercised to ensure the facility is working  
38                           properly.

1 PMI.Protocol.0900-0100 CESE and RG shall routinely load balance connections. CESE  
2 shall establish a new RG connection on a routine periodic basic in order to  
3 balance CESE connections across the available RGs.

4 Rationale: Routinely balancing connections will allow RG components to be put into  
5 service or taken out of service without requiring scheduled maintenance or  
6 requiring an infrastructure that sends notices to elements requesting  
7 connection changes.

8 PMI.Protocol.1000-0100 A CESE shall always be connected to at least one RG while it  
9 is in regular service mode (e.g. not in an error mode).

10 Rationale: A constant connection to one RG will allow the ESNet to monitor the  
11 availability of the CESE and to ensure there is constantly a communication  
12 capability between the CESE and the ESNet.

13 PMI.Protocol.1100-0100 Client and server connectivity shall be created and broken  
14 down dynamically as servers are taken into and out of service without causing  
15 abnormal processing situations or management alarm failure conditions to be  
16 initiated.

17 Rationale: Unlike the existing fixed relationship between a PSAP link and an ALI,  
18 sessions from the CESE to the RG are created dynamically. These  
19 connections will be managed such that when an RG server goes out of service  
20 the session is re-established to another server.

21 PMI.Protocol.1200-0100 The PMI between the CESE and the ESNet shall be bi-  
22 directional. That is for some services the CESE will initiate the action and for  
23 others the ESNet will.

24 Rationale: The message set used between the CESE and ESNet has evolved away  
25 from the simple query/response of the legacy interface. Depending upon the  
26 service either the CESE or the ESNet may initiate the interactions. Certain  
27 CESE messages are valid only when sent by a CESE client and others are  
28 valid only when sent by a RG server. Each message in the PMI has a specific  
29 purpose and required data elements.

30 PMI.Protocol.1300-0100 The PMI protocol suite must be extensible such that it supports  
31 varying data types such as text, graphics, voice, and video.

32 Rationale: The protocol should be able to encapsulate data types beyond standard text.

33 PMI.Protocol.1400-0100 The PMI protocol suite must be based on industry recognized  
34 message headers and allow for variable body contents such as solution  
35 approaches based on HTTP, SIP, etc..

1           Rationale:    The protocol should be based upon industry standard messaging which  
2                            supports flexibility in the types of bodies that can be transported.

3           PMI.Protocol.1500-0100 Every application level message transported between the  
4                            CESE and RG shall be followed by an immediate acknowledgement message  
5                            by the receiver to guarantee application level connections.

6           Rationale:    Acknowledgement that a message has been received is minimal overhead  
7                            and allows the sending entity to verify it was successfully transmitted and  
8                            received.

9           PMI.Protocol.1600-0100 Every application level message shall include a transaction  
10                            identifier that is created by the sender and returned by the receiver in the  
11                            corresponding acknowledgement.

12          Rationale:    Transaction identifiers are a common technique for quickly and accurately  
13                            associating a sent message with its acknowledgement.

14          PMI.Protocol.1700-0100 The PMI shall support both models where:  
15                            1) The CESE is an individual call taker position or other user within an overall  
16                            PSAP. Therefore, a PSAP is made up of a set of CESEs connections.  
17                            2) The CESE is a concentrator function much like the current ANI/ALI  
18                            controller. Therefore, the CESE provides a focal point to an RG for a set of  
19                            PSAP call taker positions or other users.

20          Rationale:    CPE vendors may choose to implement either model based on their  
21                            business needs and the services they choose to offer.

22          PMI.Protocol.1800-0100 The PMI shall support the ability for a CESE to identify specific  
23                            positions supported via a given CESE connection. The specific position will  
24                            be identified by the position number and user login identifier.

25          Rationale:    Relating a specific login identifier to a given CESE will enable advanced  
26                            services, such as, the ability to route broadcast messages to an individual or  
27                            to relate specific services to an individual. Positions might be a given call  
28                            taker, administrative user, etc.

### 29    6.2.2.1 Security/Privacy

30          PMI.SEC.0100-0100        The ESNet shall enforce secure authentication with the CESE.  
31                            Each CESE must register and authenticate with the ESNet through an RG  
32                            upon start up. All CESEs shall be authenticated before being allowed to  
33                            request services from the ESNet.

34          Rationale:    In order to validate that the CESE is authenticated, security measures such  
35                            as login/password, certificates and tokens are used to authenticate the CESE.  
36                            Only authenticated CESE sites are allowed to interact with a given ESNet.  
37                            Strong authentication between network elements can be used and

1 incorporates such methods such as authentication tokens and digital  
2 certificates.

3 PMI.SEC.0200-0100 The PMI must support weak or strong (two-factor)  
4 authentication between a CESE and ESNNet based on the configuration of the  
5 ESNNet. Methods for including login, fixed password, and token values must  
6 be present in the initialization message structure.

7 Rationale: Although strong authentication is highly recommended, not all environments  
8 may require or allow strong authentication models and, therefore, the PMI  
9 structure must be flexible.

10 PMI.SEC.0300-0100 Once the CESE registers with the ESNNet the RG shall provide  
11 an authentication ticket unique across that ESNNet instance that is used to  
12 negotiate any future interactions (such as establishing a new session) within  
13 the given ESNNet.

14 Rationale: The CESE need only register once with the ESNNet. After that all interactions  
15 should be approved through the use of an authentication ticket. If human  
16 interaction is required to complete an authentication procedure, the human  
17 must not be forced to repeat the procedure every time an additional CESE to  
18 RG connection is established.

19 PMI.SEC.0400-0100 All information passed across the network connection between  
20 the CESE and RG shall be encrypted.

21 Rationale: The most secure environment is to encrypt all information passed between  
22 the CESE and RG. A fall back position might be to attempt to identify  
23 proprietary or customer private information, including passwords, that must be  
24 encrypted as transported between physical network elements. However, this  
25 will add complexity and could lead to an incomplete solution.

## 26 6.2.2.2 Availability/Survivability

27 PMI.Avail.0100-0100 The PMI must support mechanisms for dynamic connections  
28 and load balancing such that components can be introduced into the network  
29 in an incremental fashion without impacting existing services or operation.  
30 Also, so that CESEs can be added and connection balanced across the  
31 available RGs.

32 Rationale: A key architectural element is the scalability of the network so components  
33 (CESEs and ESNNet elements) can be added in a production environment  
34 without impacting immediate processing capabilities or services.

35 PMI.Avail.0200-0100 The PMI must include mechanisms to regularly verify  
36 application level sanity by exchanging heartbeat messages. The PMI shall  
37 support heartbeat application level messages between the CESE and RG.

1           Rationale:    TCP/IP will verify transport level protocol sanity. A method is necessary to  
2                      ensure, while application level connections are otherwise idle, that application  
3                      level capabilities exist at both ends of the PMI before an emergency event  
4                      occurs. It must be recommended in the PMI behavior rules that both ends  
5                      (CESE or RG) issue a PMI report message and create local application level  
6                      alarms upon detection of a communication availability failure.

### 7   **6.2.2.3   Extensibility**

8           PMI.Exten.0100-0100    The PMI shall be extensible such that new services can be  
9                      incorporated by adding new service identifiers and supporting the  
10                     corresponding message body transport without impacting the basic PMI  
11                     protocol.

12          Rationale:    The initial version of the PMI will accommodate as many existing scenarios  
13                      as possible. However, it is expected that the message set will be modified as  
14                      it is discovered that additional primitive capabilities are required to realize new  
15                      and innovative services. These primitives should facilitate a smoother  
16                      migration as we evolve the services made available to PSAPs and other  
17                      emergency service providers.

18          PMI.Exten.0200-0100    The message set and protocol should allow for the migration  
19                      toward routing, management and data services integration with voice and  
20                      corresponding control protocols such as SIP.

21          Rationale:    This message set and protocol should set the stage for evolution for  
22                      emergency services that integrate voice and data capabilities. While not  
23                      dependent or directly linked with VoIP, this architecture should facilitate the  
24                      migration to VoIP. No specific functional behaviors are identified at this point  
25                      in time, so, this statement is currently here to foster forward thinking.

26          PMI.Exten.0300-0100    Service types shall be supported through Service type  
27                      identification tags. Service types shall include:  
28                      1) Services that only deliver information to the CESE from the ESNNet during  
29                      an emergency event.  
30                      2) Services that deliver information to the CESE from the ESNNet during an  
31                      emergency event and the CESE can transmit information to the same ESNNet  
32                      service.

33          Rationale:    Service interaction models identified in the message set during an  
34                      emergency event allow the CESE and ESNNet software components to  
35                      implement standard interaction models with various services without making  
36                      specific software changes for every possible service.

### 37   **6.2.3   Manageability**

38          PMI.Man.0100-0100    The PMI must allow suspension of heartbeat and availability  
39                      monitoring messages so that they do not significantly impact the processing

1 required to complete core application functions. Automatic maintenance  
2 service protocols and messages shall not impact or incrementally add load to  
3 primary processing functions when high traffic conditions occur.

4 Rationale: Maintenance functions will have a lower priority than event processing and  
5 will not be required to be transmitted when other activity, such as emergency  
6 event messages, are otherwise being transmitted between the CESE and RG  
7 and are therefore exercising the application level sanity of the two end points.

8 PMI.Man.0200-0100 The PMI shall allow a CESE to indicate that it is shutting down  
9 under nominal processing logic. Therefore, the RG should not raise alarms,  
10 should suspend availability monitoring of the CESE's connection and shall  
11 implement shutdown protocols with its CESE client.

12 Rationale: This will enable a CESE to go to a quiescent state in a clean and  
13 uninterrupted manner.

14 PMI.Man.0300-0100 The PMI shall allow an RG to indicate that it is shutting down  
15 under nominal processing logic. Therefore, the CESE should not raise alarms  
16 and should suspend availability monitoring of the CESE's connection. The  
17 CESE should establish a new connection to an RG and begin submitting all  
18 new emergency events on the new connection.

19 Rationale: This will enable an RG to go to a quiescent state in a clean and  
20 uninterrupted manner. The CESE should attempt to complete all transactions  
21 and open emergency events in progress and new transactions shall be  
22 directed to the new RG connection.

23 PMI.Man.0400-0100 The PMI behavior rules should indicate that if a CESE loses its  
24 connection to an RG before all transactions are completed that the CESE  
25 should establish a connection to another RG and resubmit the transactions.

26 Rationale: Abnormally losing a connection to an RG should be a rare event. However,  
27 when it does occur the CESE should take corrective action to complete the  
28 transactions in progress.

29 PMI.Man.0500-0100 If the RG requests the CESE to end a session then the CESE  
30 shall establish a new session to another RG prior to releasing the existing  
31 session.

32 Rationale: In order to assure full time availability between the CESE and ESNet care  
33 should be taken in managing the sessions. A new session should always be  
34 set up prior to removing an old session. This allows traffic to gracefully migrate  
35 over to the new session and allows the old session to be disconnected without  
36 impacting Emergency Call Events. To achieve this goal, the CESE should  
37 continue using the old application session until it ensures that the new session  
38 has been accepted by the ESNet. At the time that the new application session  
39 has been accepted, the CESE would stop using the old session for new

1 Emergency Call Events. The old session will be kept intact until all Emergency  
2 Call Events on that connection are completed.

3 PMI.Man.0600-0100 The PMI behavior rules shall specify that if a CESE attempts to  
4 open a new session (a second session) to exercise possible links and cannot  
5 do so, it shall send a report notification message across the original RG  
6 session notifying the ESNNet of the situation.

7 Rationale: As discussed previously, the CESE should periodically exercise links to the  
8 ESNNet by establishing a session and disconnecting the original session. If the  
9 CESE attempts to establish a new session and cannot it should send a  
10 notification to the ESNNet of its inability to establish a new session.

11 PMI.Man.0700-0100 The PMI shall support messages for the RG to notify the CESE  
12 that a call event discrepancy has been detected.

13 Rationale: Allows notification between the CESE and RG that call event status was  
14 incorrect between the two end points, probably pointing to an abnormal event  
15 or software defect. Related to PMI.Report.200-100

16 PMI.Man.0800-0100 The PMI shall support messages for the CESE to notify the RG  
17 that a call event discrepancy has been detected.

18 Rationale: Allows notification between the CESE and RG that call event status was  
19 incorrect between the two end points, probably pointing to an abnormal event  
20 or software defect. Related to PMI.Report.100-100

## 21 6.2.4 Services

### 22 6.2.4.1 Emergency Call Event Services

23 PMI.EmergEvent.0100-0100 The PMI shall support the interleaving of queries and  
24 responses for multiple Emergency Call Events.

25 Rationale: The CESE may handle multiple calls simultaneously. So the CESE may  
26 possibly have multiple Emergency Call Events open at the same time. The  
27 response to queries for an Emergency Event may vary based upon where  
28 data is located and the type of call. For example the response for a wireless  
29 Phase 2 call may require significantly more time than a wireline call and may  
30 result in multiple responses from the RG to the CESE.

31 PMI.EmergEvent.0200-0100 The PMI shall provide a method for the ESNNet to  
32 correlate an emergency event submitted from a CESE with all responses  
33 generated from the ESNNet and sent to the CESE. The RG shall assign each  
34 Emergency Call Event a unique identifier called Call ID.

35 Rationale: For each message that is of a query/response type a method such as a  
36 transaction ID is required to allow the originating party to correlate the request

1 with the response. The Call Identifier shall be used to correlate all messages  
2 associated with a specific event.

3 PMI.EmergEvent.0300-0200 The PMI behavior rules shall specify that the ESNet  
4 generate a unique identifier for each emergency event per  
5 PMI.EmergEvent.0300-0100 and that it is unique across the given ESNet  
6 instance.

7 Rationale: This identifier is unique to this event instance and is persistent through the  
8 duration of the event. The identifier is unique across all instances of events  
9 within the instance of an ESNet.

10 PMI.EmergEvent.0400-0100 When an Emergency Call Event is complete the CESE  
11 shall issue an event complete message to the RG. It may pass in the event  
12 complete message any local notes that may have been collected during the  
13 processing of the event or may send notes after the event complete message  
14 is transmitted.

15 Rationale: When the call is terminated and the call taker completes activity associated  
16 with the event, a call termination message must be sent to the ESNet to allow  
17 it to clean up transient data and log the event. This notification also allows the  
18 RG to recognize that no further services for the event are to be sent to the  
19 CESE.

20 PMI.EmergEvent.0500-0100 When a CESE issues an Emergency Call Event to the  
21 RG, the ESNet shall determine if there is an existing event open for the given  
22 key identified for the event. If there is an open event, the CESE will be notified  
23 that another CESE is currently engaged in an open event and the ESNet will  
24 use the existing Call Identifier for the additional CESE responses.

25 Rationale: These features allow correlation of the same events across CESE call takers  
26 and can facilitate cooperative features between the CESE call takers.

27 PMI.EmergEvent.0600-0100 The PMI must provide a message indicating to the  
28 CESE that a manual ALI retrieval was attempted, but, ESNet administration  
29 prohibits this PSAP from completing a manual bid.

30 Rationale: Due to local government regulatory constraints many PSAPs cannot perform  
31 manual ALI bids. The ability to prevent manual ALI retrievals can, from a  
32 practical and historical point of view, be implemented in either or both the CPE  
33 and ESNet.

#### 34 **6.2.4.2 CESE Transfer Services**

35 PMI.XFER.0100-0100 When an emergency call is transferred to another CESE or  
36 PSAP, the CESE shall notify the RG that the transfer is taking place.

1           Rationale:    Having the CESE notify the ESNet will allow the ESNet to implement  
2                            services and recognize multiple accesses for the same call event.

3    PMI.XFER.0200-0100    The PMI shall support passing of any local notes, supp. Info  
4                            and TTY text from the CESE to the ESNet gateway that may have been taken  
5                            that relate to the event.

6           Rationale:    When a call is transferred there may be useful data collected at the  
7                            originating CESE which could be helpful at the transferred to CESE. If the  
8                            originating CESE notifies the ESNet of the event and passes the data, it can  
9                            be available to the transferred to CESE when it queries.

10   PMI.XFER.0300-0100    Upon detecting a previously existing event, the RG shall return  
11                            all relevant event information along with the existing Call Identifier and any  
12                            local notes & supp info and TTY text that may have been uploaded to the  
13                            ESNet.

14           Rationale:    When a call is transferred and the transferred to CESE queries, the ESNet  
15                            may associate the events and pass the existing Call Identifier and any local  
16                            notes that may have been provided.

17   PMI.XFER.0400-0100            PMI will support a message notifying a given CESE that  
18                            an additional CESE has joined a given call event as identified by the Call  
19                            Identifier. Both the existing CESE and the joining CESE receive this  
20                            message.

21           Rationale:    This capability enables a CESE to implement services and features based  
22                            on knowing that another call taker with PMI capabilities is engaged in the  
23                            given call event.

24

### 25   **6.2.4.3   Instant Messaging**

26   PMI.IM.0100-0100            PMI shall support an Instant Message Session invitation  
27                            message to all participants currently active in a given call as identified by a  
28                            common call identifier. This is initiated by a given CESE that is active in the  
29                            call event.

30           Rationale:    Enables the initiation of an Instant Messaging session between two or more  
31                            CESE end points.

32   PMI.IM.0200-0100            PMI shall support the ability for a given CESE to join an Instant  
33                            Messaging session related to an open emergency event that it is currently  
34                            engaged in as determined by a Call Identifier.

35           Rationale:    Provides local control over IM for a given CESE. The CESE could be a call  
36                            taker, an administrator, or other user.

1 PMI.IM.0300-0100 PMI shall support the ability for a CESE IM Session participant  
2 to drop from an IM Session.

3 Rationale: Provides local control over IM for a given CESE.

4 PMI.IM.0400-0100 PMI shall notify other participants in a CESE IM Session that a  
5 given participant has dropped or has been added.

6 Rationale: Allows sharing of the state of the IM Session with other CESE IM Session  
7 participants.

8 PMI.IM.0500-0100 PMI shall support sending IM Messages to other IM Session  
9 participants. Messages are sent to all CESEs engaged in the given IM  
10 Session.

11 Rationale: Allows instant message communication between CESE participants that  
12 have joined an IM Session.

13 PMI.IM.0600-0100 PMI shall support a message for a given CESE to decline  
14 participation in a given IM Session.

15 Rationale: Allows instant message communication between CESE participants that  
16 have joined an IM Session. This would be in response to the IM Session  
17 notify message.

#### 18 6.2.4.4 Information Discrepancy Services

19 PMI.DISC.0100-0100 The PMI shall support an information discrepancy notice from  
20 the CESE to the RG if a specific body of information provided in an  
21 Emergency Call Event is found to contain errors. The message need not be  
22 sent from the CESE to the RG during the actual open emergency event  
23 message sequence.

24 Rationale: Automated reporting of information errors (such as ALI) can result in  
25 dramatic 9-1-1 data improvement and reduction of timeframes required to  
26 report problems and have those problems corrected in the information source  
27 providing database.

28 PMI.DISC.0200-0100 The PMI shall support a flag indication on an Event Response  
29 information body basis as to whether automated discrepancy reporting is  
30 supported for the information packet by the given information provider.

31 Rationale: Information provided via the PMI can be provided from varying information  
32 source providers. Each information source provider must be able to accept  
33 automated discrepancy reports or the PMI must not create said discrepancy  
34 reports. In no case shall a report be sent that the information provider is not  
35 prepared to properly handle.

1 PMI.DISC.0300-0100 The specific PMI message from the CESE to the RG that  
2 indicates an information discrepancy shall support a textual description  
3 indicating the problem, issue, or the correct information related to the given  
4 information discrepancy.

5 Rationale: During a call it is possible that the call taker obtains information that  
6 illustrates that the display information is incorrect. They may use this capability  
7 to notify the ESNNet of the difference between the received information and that  
8 obtained during the call. This message may also be sent after an Emergency  
9 Call Event if a supervisor first triages the information. This notification  
10 requirement supports reporting of discrepancies in English Language  
11 Translations (ELT).

12 PMI.DISC.0400-0100 The CESE shall support a misroute discrepancy notice from the  
13 CESE to the RG if the call taker detects that a call directed to their PSAP  
14 should have been directed to a different PSAP. This message will support a  
15 textual reason description field that can be filled in by the call taker.

16 Rationale: Call misroute reports are another common problem that needs automated  
17 management.

#### 18 6.2.4.5 Broadcast Notification Services

19 PMI.BROADCAST.0100-0100 The PMI shall provide the capability to send an  
20 informational message to a given CESE.

21 Rationale: Broadcast notification is a service that allows an authorized agency to send  
22 a message to the CESE that may be of interest to one CESE, a group of  
23 CESEs or all CESE. An example may be an Amber alert.

24 PMI.BROADCAST.0200-0100 The PMI shall allow a broadcast message to be  
25 targeted to a specific user or group of users.

26 Rationale: Specific messages might be targeted to users who have special capabilities  
27 or serve specific roles.

28 PMI.BROADCAST.0300-0100 The broadcast notification service shall have the  
29 capability of sending text, graphics and video.

30 Rationale: All categories of media will be available to the CESE with the broadcast  
31 notification service.

32 PMI.BROADCAST.0400-0100 The broadcast notification service shall have the  
33 capability to send links to information which the CESE may use to obtain  
34 additional information.

1           Rationale:    Additional information may be available beyond that which is transmitted to  
2                            the CESE. Links, such as a URI, may be transmitted in the message and the  
3                            CESE may use the links to obtain additional information.

#### 4   **6.2.4.6   Report and Status Services**

5           PMI.REPORT.0100-0100        A given CESE shall have the capability to request the  
6                            status of a specific or all Emergency Call Events that are active within the  
7                            ESNet pertaining to that CESE or related to the PSAP (group) that the given  
8                            CESE belongs.

9           Rationale:    The call taker, supervisor, or administrator at a CESE should have the  
10                           capability to obtain the list, and relevant information, for all active Emergency  
11                           Call Events relating to their call taker position or their PSAP in order to  
12                           reconcile the status of processing of the event.

13          PMI.REPORT.0200-0100        The RG shall have the capability to request the status of  
14                           a specific, or all, Emergency Call Events that are active for a given CESE.  
15                           Status will consist of in-progress or complete, engaged in a transfer or not, IM  
16                           active or not, Call Identifier, and whether the call contains optional notes, info  
17                           and TTY.

18          Rationale:    The RG will need the ability to update the state machine processing logic for  
19                           a given or for all events for a given CESE connection in order to ensure  
20                           processing logic and to detect “hung” emergency event processing situations.

21          PMI.REPORT.0300-0100        The CESE shall have the capability to request an  
22                           activity report regarding current or recently concluded Emergency Call Events.

23          Rationale:    It may be useful for the CESE to request a management information report  
24                           that may be used to survey historical activity. This report may include events  
25                           segmented by class of service, events received over a reporting window (day,  
26                           week, etc.) and other such selection criteria.

27          PMI.REPORT.0400-0100        The RG shall have the capability to request a  
28                           configuration report from the CESE.

29          Rationale:    For trouble shooting and management it is useful for an administrator at the  
30                           Emergency Service Provider to obtain current information regarding the  
31                           configuration parameters of the CESE. This report may include network  
32                           connections, number of position supported by the CESE and other such  
33                           configuration-related information.