Primer on the International Aspects of International Priority Communications Policy

All packets cannot be equal

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***Abstract*—If this "Primer on the International Aspects of International Priority Communications (IPC) Policy" establishes a common understanding of what IPC is and is not, so that the other contributed papers to this Summit can then consistently build on that foundation, then it purpose has been achieved.**

It is imperative that high priority critical communications be served across international boundaries. Under severe conditions such as a disaster or crisis, the communications networks may well be offered much more communication traffic than the bandwidths can support. In such cases some, or most, traffic must be shed allowing other communications proceed. Rather than a random or arbitrary mechanism for discarding a subset of the communications, a system may have a means of marking critical communications such that a higher level of probability of completions exists for such communications as compared with other message attempts on the same network. Determination of Critical Infrastructure is a matter of local policy and may include power, water, finance, and civil order as some examples.

This paper addresses aspects of such Priority Communications when the origination and destination points are in different nation's networks (international). This paper does not address the selection and transmission mechanisms used within a national network as this is a matter of local policy.

Keywords-component; Policy, International, High priority communications, wireline, wireless, Internet, future communication protocols & networks, crisis, disaster

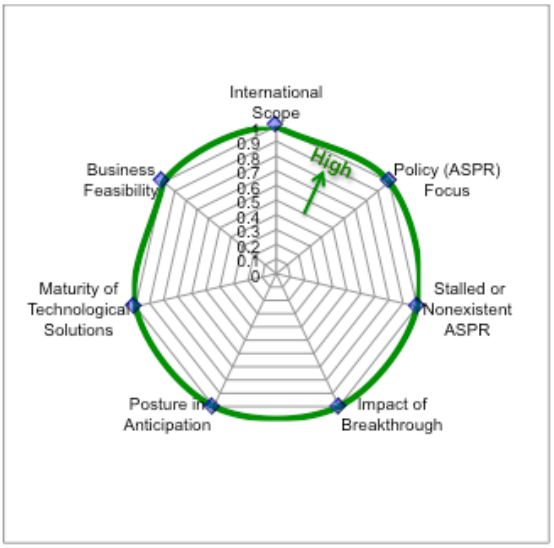
I. INTRODUCTION

This breakthrough subject was developed during the first Worldwide Cybersecurity Summit.[1] Despite international technical standards having been developed, the world lacks an international priority communications capability because policies do not exist to guide the implementation. As a result, the world's government and private sector decision makers have less than acceptable probability of completing critical communications during an international crisis. What could be a 90% blocking rate for all calls on public networks during a crisis could be addressed with proven technical solutions so that 90% of essential calls are completed.

The Institute has raised awareness of this under discussed vulnerability, is currently convening world-class experts and stakeholders to work out policy solutions, and will champion the mobilization of resources to implement an international priority communications capability.

The following chart shows the high relevance of this topic to the EWI Criteria:

- International in scope
- ASPR focus
- Stalled or nonexistent ASPR
- Impact of breakthrough
- Posture in anticipation
- Maturity of technology solutions
- Business feasibility



[1] May 2010 Dallas, TX USA www.cybersummit2011.com/dallas-2010.html

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It seems useful to begin further discussion on this topic at this 2011 Summit by addressing:

- What IPC is not
- What IPC is
- Concept
- FAQ
- National
- International
- Standards
- Impediment
- Next Steps

While outlined in this paper, the next steps are quite fluid and it is both expected and desired that these evolve by the work done during this summit.

II. WHAT IPC IS NOT

A. There is often confusion as to if "Citizens calling for assistance (112, 911, etc)" constitutes high priority communications.

While such communications are of course of great importance to the callers, they are naturally limited by the number of call takers available to respond to such calls. In the situation of a disaster, it is regrettably likely that the offered calls will vastly exceed the number of call takers and extraordinary efforts to deliver such calls will only result in the ineffective use of scarce bandwidth and an ultimate rejection at the termination point.

The desired Public Service Answering Point (PSAP) is likely the one assigned to service the locality from which the communication has been placed, or a regional backup PSAP. In order to be effective, the PSAP must be able to reach out to the local first responders in the vicinity of the caller in order for the dispatched service unit to be effective and timely.

Since every citizen is allowed to place such communication attempts without validation that an emergency condition actually exists, and often even no caller identification authentication is performed, this avenue is rife for abuse and even denial of service attacks unless chocked off close to the attempt origins.

With the rare exception of localities straddling an international border and bilateral agreements between the local authorities, such communications are not international by design.

Thus for the purposes of this paper, these calls are not included in the IPC category, although they may in fact lead to secondary IPC communications as a result of the responders attempting to procure the resources necessary to assist with the restoration of the impacted area.

B. Early warning to citizens (broadcast, mass or robo calling, text, etc.)

Such communications are becoming more popular as the technology is now available and it is thus possible to not only alert the affected population with ringing town bell, police vehicles with loud speakers, but also TV and radio broadcasts as well as telephone calls, e-mails, and text messages within the designated boundaries.

While such communications are important, they should not be allowed to usurp all the bandwidth available thus preventing other communications. However, the communications necessary to activate such warning schemes would be high priority.

The alerts have traditionally been directed to a locality within a country, but the communications to establish and activate such alerts may well be international in scope if the caller is in another country and is attempting to warn the activator in the affected country or countries.

C. Priority communication confined within a country

By definition priority communications that reside solely in one country are not international and thus are a matter of local policy.

D. Totally new concept.

Priority communications between countries is not a new concept although the technology has evolved significantly since the days of dedicated wire between nations nerve centers, such as the famous red phone between Moscow and Washington. History is full of fleet-footed embassaries carrying critical documents between kings and other leaders.

We are now making use of the Standards that have been created by various international bodies for the marking and treatment of such high priority electronic communications over the public networks between nations.

III. WHAT IPC IS

*A. Communication carried **between nations** with a **priority** above normal traffic*

As we stated earlier, the communication must originate in one country and terminate in another to be international and the communication must be carried across the international transmission leg at a priority above that of the normal traffic to be an International Priority Communication.

Both of these conditions must be met for the classification. However, high priority treatment in the originating or terminating network is a matter of local policy and does not need to exist for the communication to be IPC. It should be realized that the communication may not be successfully established if congestion is encountered in a national network that does not support a form of priority communication or if the attempt is not so marked for treatment.

B. Legacy, NGN Internet based, future technologies

The intent is that IPC should be inclusive of the various electronic protocols and networks. The user should be able to use any common communication device and reach the desired party who may be using a different technology. This is really no different than placing a call from a cell phone to a land line, as an example.

Just as the user can access a variety of end devices, the associated supporting local networks can and most likely use another protocol and transmission scheme. For example, while wireless may be used between the caller's instrument and the cell tower, Signaling System 7 protocol is often used over the wireline trunks connecting the cell site to the provider's backbone network and for interconnection to a legacy wireline network for transport.

The international gateway nodes would be tasked with the recognition of a priority indicator in the incoming protocol stream and the conversion to the international standard for the international leg of the transmission. The far end gateway would likewise be tasked with any conversion to a national network for completion of the session establishment. The gateways would of course also do any required protocol conversions to resolve differences between the originating nation and the terminating nation. (As an example, there are different country flavors or dialects of SS7 that are not plug compatible and need the services of a gateway to map the communication.

This service should be future proof as far as possible by the extension of protocol indicators and corresponding procedures so the service concept does not need to be reinvented each time a new version of technology is deployed. So legacy wireline, wireless, Next Generation Network IP, and future, as yet undefined, technologies should be designed to inherently support IPC as a given.

C. Dedicated, public, or both network types

National priority communication schemes vary between counties. A country may simply have no scheme, a private network dedicated for such communications, a sharing mechanism on the public network, or any combination of these schemes. As stated before, the national scheme is a matter of local policy, but for IPC to be a reality the national scheme(s) needs to interwork with the international scheme at the gateway and vice-versa.

D. May have priority in the originating country, intermediate countries, and destination country

Authorization and authentication are essential parts of a national scheme, but at this point in the development it seems reasonable that whatever degree of validation performed by the originating nation be acceptable to the international leg. It is assumed that bi-lateral or multi-lateral agreements need to be in place to support an end-to-end priority communication. Depending on specific political arrangements a given communication may or may not have priority in the originating country, intermediate countries, or the destination country. Because the success of a completed communication depends on not being discarded during congestion, the wider the priority coverage is provided the higher the probability that the communication will be successful.

IV. LEVEL OF TECHNICAL DETAIL

Since this paper is focused on the International aspects of Priority Communications and more specifically the agreements and policies needed for its implementation and wide deployment, discussion using the technical jargon, details of the various protocols, authentication, authorization, chains of trust, message flows, and error treatments are outside the scope of this initial paper. These topics will be fully addressed as needed when establishing the agreements and resolving the deployment inhibitors. The current level of international standards [2] provides a sufficient starting point for those motivated to making IPC a reality.

The focus here is on the next steps to be taken, and perhaps more important, by whom these steps should be taken.

A. The concept is not new

As stated earlier with the Red Phone example, in the past IPC has often been establish using costly dedicated procedures on dedicated resources.

V. THE CONCEPT

A. Not all traffic is equal

It can be vastly more economical and wide reaching if rather than dedicated facilities, shared public resources are used. Compare the cost of laying a dedicated transoceanic cable for use only a fraction of the time, with that of an existing traffic carrying cable and the bit of protocol and procedures to give IPC traffic sharing the facility a higher probability of completion.

Rather than building separate roads for emergency vehicles, societies share the roads with common traffic and emergency vehicles that mark their missions with red, blue lights and sirens for priority in traffic. There is priority in traffic for authorized people performing emergency role.

Regardless of the various national scheme implementations, it is proposed that shared facilities with appropriate marks and procedures be used for the international legs of IPC. The gateways can be designed to perform the necessary mappings for this "software only" solution.

B. More traffic than can be served

The "information pipes" are normally dimensioned to carry statistically offered traffic, rather than all possible traffic simultaneously. But when there is a unanticipated gigantic spike[3], the pipe becomes damaged[4], or both, the congestion[5] will occur and some communications will fail.

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[2] Bodies such as the ITU-T and the IETF have produced Standards as have some regional standards bodies such at the North American ATIS.

[3] Extreme load exceeding capacity limits, statistical variation or externally caused spike

[4] Physical damage, Soft damage, Cyber-attack. DDOS, virus, etc.

All networks have intrinsic vulnerabilities which can result in unanticipated degradation of the network's ability to handle offered traffic.

The term priority communication can cause confusion as to what traffic treatment enhancements are included.

The most critical treatment is that which increases the probability that the attempt will not be discarded when congestion is encountered. This treatment may preclude selection for discarding or may also include more aggressive rerouting, longer queuing times, camping on for resources, etc.

Some people may envision that priority also means being served ahead of normal traffic attempts. The author is aware of this belief but has not seen its implementation in the national schemes he has helped develop or studied. This is not to say that a priority scheme could not be so designed if a need compelled its creation.

As long as the number of priority attempts is small compared to the normal attempts, these tools can prove effective without significantly impacting the normal traffic more than it is already impacted by the congestion.

An example from the U.S.:

GETS (Government Emergency Telecommunications Service) uses the ubiquitous **public** network with the anticipation that during a crisis the offered traffic can be **10 times** the engineered capacity! Under such conditions > 90% of public attempts will **fail**, but >90% of priority calls will **succeed** on first attempt.

C. *Traffic payload*

As technology progresses it is important that IPC be designed not to become obsolescent in a short period of time. Thus from the beginning it should encompass the legacy technologies[6], the current leading edge capabilities[7], and future services[8] to the extent on can envision.

VI. Ten Frequently Asked Questions

A. *Does it violate "net neutrality"?*

The concept of "net neutrality" is that all messages of the same class should be treated the same and that preference treatment (enhancement or degradation) should not be performed to give a business advantage to selected originators. It has long been a policy that different classes of communication have different procedures from each other, including but not limited to separate queues and different treatment for processing messages in the separate queues.

Wireline and wireless national priority services in the US have established the principle that these calls can have a higher level of probability of completion without preemption of normal traffic attempts.

National net neutrality is, in the end a matter, of local policy and may have different compliances in each country with such a policy. This is beyond the scope of this paper but may be addressed when the bi-lateral and multi-lateral agreements are established for IPC.

B. *Doesn't it require re-architecture of the Internet to provide? New hardware? incompatibilities?*

The general consensus from the technical community is that IPC can be accomplished using the existing Internet architecture. Protocol elements such as the optional Resource Priority Header can be used as a marker and the necessary enhanced procedures for treatment of the packets can easily be confined to software/firmware within the various nodes.

It falls upon the gateway nodes to "map" across any protocol differences between the various networks, thus avoiding incompatibility issues.

During the "next steps" these conjectures can be fully validated as the plans for implementation are addressed in the excruciating detail needed for successful deployment.

C. *There is so much spare capacity, so it is not needed, right?*

While currently there is often significant excess capacity in the backbones in many countries, the access between the ISP and the end user may be much more constrained.

History has shown that as time passes, our communication expectations increase dramatically. We have gone from simple e-mail ASCII messages to video applications, and soon to 3D video. One can reasonably expect that the spare bandwidth will eventually become fully occupied.

A disaster[9] situation may destroy a significant degree of the infrastructure thus creating choke points.

A denial of service attack or other intentional acts may create points of congestion above the anticipated spare bandwidth allowance.

The traffic during a disaster may very well peak far beyond normal offered traffic as the population tries to gather information about the disaster and to communicate with friends and family in the area.

Each of these factors alone and in combination increases the probability of congestion and thus the need for IPC.

D. *If we just block the kids texting, then there would be lots of capacity, right?*

If such texting results in a significant portion of the international traffic, then turning it all off is overkill to provide the needed bandwidth for the relatively few IPC messages. Throttling the traffic would be more reasonable but would require a mechanism to determine how much bandwidth is needed for the IPC messages which may a sporadic and

[5] Today's situation caused by events (failures – insufficient redundancy). Tomorrow's situation potentially caused by inability to build ahead of demand.

[6] Wireline & wireless voice, fax

[7] Voice over IP, data, video

[8] Virtual presence and holograms

[9] Natural or man-made

unpredictable arrival. This would result in wasted bandwidth or blocked IPC attempt s and most likely both conditions over a period of time. Instead the use of IPC procedures would allow the bandwidth to be fully used by normal traffic and still allow a higher probably of communication success for IPC, requiring only a bit more algorithm sophistication then a predictive throttling scheme.

Without an unrealistic deep packet inspection, the throttling/blocking node would not know which messages were just "social" and which messages from the population were important for maintaining life, limb, and property during a crisis. With IPC no additional[10] normal attempts are discarded.

E. *Let Priority Communications use separate, dedicated network. OK?*

In theory, this is a solution. However, the cost of such a separate international network dedicated solely for IPC traffic would carry such a high cost for the service, that it is clearly unrealistic to expect that such a network would ever be deployed, or widely deployed other than in very narrow point-to-point situations[11].

F. *What about preemption?*

This is a matter of local policy for national priority schemes. Some countries use preemption as the primary scheme during a crisis, while other countries such as the US do not preempt wireline or wireless calls for their national priority schemes[12].

G. *What about disagreements in who should be given what priority?*

Since IPC communications begin in a national network, the authentication, authorization, and priority level[13] are a matter of local policy. Based on bi-lateral agreements, the gateway node would be responsible for mapping the priority levels between the two national networks.

IPC communications are likely to be essential for the recovery from the disaster but may be a small number of communications when compared with the priority communications within the afflicted country. Thus, IPC procedures needs to be able to support the communications without imposing restrictions upon the national procedures and protocols in use.

H. *Potential to compromise network by spoofing authorization? DDoD attack?*

Any scheme that supports making some traffic more "urgent" than normal is subject to an attack on this new vulnerability. To deny this potential would be unwise. There are, however, procedures that can detect and isolate such attacks reducing the risk while maintaining the advantage offered by priority schemes. It would not be prudent to address how such schemes work[14] in this paper since disclosure would needless give aid to potential attackers.

I. *But there has never been an international congestion crisis so why worry now?*

For the same reason that one does not wait to buy fire insurance until after the house is burning, it is prudent to move forward with IPC now so that it is in place when the "unthinkable" does happen. I would much rather deploy IPC and find that it has not used, than to not deploy it and live in regret after a crisis that would have greatly benefited[15] from IPC if only it had been in place. While perhaps a low probability of need, the consequences of doing nothing now are too costly to be justified, especially in the eyes of the public after a crisis.

J. *Who is going to pay? Can we use a business feature?*

The question of funding is a difficult one and that it is why it is the last on the list. From a purely technical point it doesn't matter how the work is funded as long as it happens. From a more practical point the work will not happen until there are international agreements on the need for IPC and the funding model.

There are different views on if IPC could be a business feature as well as a government disaster recover feature. It has been proposed that having multiple levels of levels such as ordinary traffic, a block of business priority levels[16], and then levels used by the government and critical infrastructure for restoration. Others have proposed that IPC be reserved for restoration. Since the levels may be derived from national schemes, this topic may be confined to the bi-lateral agreements directing the gateway mapping procedures for IPC.

VII. National Priority Schemes

Several countries already have or are developing priority communications capability using the national public network, a private overlay network, or a combination. Different countries have different schemes, procedures, authorizations, multiple priority level assignment rules. Since this paper is confined to international aspects, descriptions of how these various schemes are designed or their effectiveness is out of scope.

The service can be "always on" or invoked by authority in times of crisis.

By and large, technology limitations are not an issue. International Standards exist [17] for voice and NGN communications. [18]

The determination of who qualifies for this capability and how users are authenticated and authorized is a government

[10] Normal attempts are discarded when no bandwidth is available, but is not further impacted by IPC attempts
[11] See the Red Phone example.
[12] Government Emergency Telecommunication Service (GETS) for wireline and Wireless Priority Service (WPS) for wireless calls.
[13] Some schemes use a single priority indicator while other may use multiple level, such a five or some other value
[14] The author has developed a number of such mechanisms for protecting a national network from a foreign attack.
[15] The benefits might be the saving of lives, limbs and property, avoiding unnecessary escalations, faster recovery, etc. as each crisis is unique.
[16] Silver, gold, platinum, etc.
[17] But may require additional development as part of the next steps
[18] Such as voice, video, data, and future services

agency responsibility, and may be accomplished in several ways. The US wireline scheme recognizes that the authorized individual may not be in the office at the time of an emergency but could be any number of places with access to a telephone set and is based on the caller using any standard telephone set and dialing a special access number followed by a unique ID for the individual [19], followed by the desired destination number. On the other hand, the US wireless scheme recognizes that the individual is likely to be carrying the cell phone at all times and is thus based on the assignment of a priority level stored in the home service provider's data base. The user dials a special code[20] to alert the system that this is to be a priority call followed by the desired destination number. Clearly these two US examples just address difference in the assignment and authorization schemes as evidenced by how the user accesses the service and do not address the procedures deployed to create the higher probability of completion. From the international aspect, our role occurs after the user has initiated the attempt and it arrives at an international gateway.

VIII. International Priority

A. *Is international service really needed?*

The author has not been able to name three recent crisis or disasters that would not have benefited from International Priority Communications:

- Terrorist attack?
- Tsunami?
- Earthquake?
- Hurricane?
- Flood?
- Disease outbreak?
- Communications disruption- natural or man-made?
- Military event?

In today's world even local events benefit from international communication, cooperation, and coordination. The Australian wildfires, China's 2010 Qinghai and Sichuan earthquakes, Hurricane Katrina, July 7 London bombing, Mumbai terrorist attack, September 11 terrorist attacks, Thailand Tsunami, and the recent Japan earthquake and its aftermath.

B. *Who are these priority users?*

It is up to each nation state to determine the critical people in:

- local, regional, and national government
- agencies focused on disaster relief
- critical infrastructure
- private industry

A few words regarding the purpose of priority communications may be helpful in clarifying that this may be a broad brush that covers disaster recovery and relief, but also the essential aspects of maintaining civil order and some level of banking and commerce needed to maintain the social structure. Determination of Critical Infrastructure is a matter of local policy and may include power, water, finance, food, information to the population and civil order as some examples.

C. *Bi-lateral or multi-lateral agreements on authorization and levels*

The reader is reminded that differences in national policies can be resolved as the messages pass through gateway nodes that can map priorities.

D. *Prerequisite*

Having at least some rudimentary national priority scheme or separate network seems essential for the marking of originating communication attempts in that network which are destined to receive priority recognition at the international gateway. It should however be noted that this precursor is not symmetrical. An international priority communication transiting from a gateway to a national network without a priority scheme or a bi-lateral agreement could be treated as a normal attempt for the rest of the path establishment to the desired destination address. The probability of completion would be determined by the degree or absence of congestion in the remaining network elements. From this the reader can see that IPC is not an "all or none" concept but can be introduced between wiling nations and grow to accommodate more nations joining over time. The best outcome for an attempt is that it receives priority over the whole path, while the worse outcome is that it is treated as a normal communication attempt, and in a mixed environment the attempt has priority over a portion of the path.

E. *Approach*

One logical way to grow IPC is to establish regional agreements between countries to honor priority communications flowing between them. One example would be the agreements between the US and Canada.

As regional clusters form, the nation states could then reach agreements to honor IPC between the regions, and finally this could grow into a global agreement. This view is certainly a simplification but as the technology exists, it is reasonable to hope for the political will to bring global IPC into reality for all the countries that desire to benefit from its existence.

IX. STANDARDS

While this paper is intended to address policy rather than any specific implementation, it must be recognized that a number of standards bodies[21] are working on the protocols and procedures required for successful IPC and some organizations

[19] This is subjected to an authentication look up.
[20] Without the special code the call is treated as normal priority
[21] ITU-T, IETF, ATIS, ARIB, CCSA, TIA,TTA, ETSI TISPAN, & 3GPP to name some

have produced recommendations[22] on the topic. Coordination with these bodies should be included in any next steps.

X. Impediments

Having been presented with a compelling case for the immediate introduction of IPC on a global level, one may well ask why this is simply not occurring.

There may be a lack of awareness of the importance of such capability or that it is even within the realm of possibilities. People often proceed with the status quo assuming that it has served in the past and thus is "good enough" for the immediate future. Some day in the future science fiction will catch up to science reality and magically we will all have global tele-presence

Our leaders and decision makers have a whole host of current problems occupying their focus that they need to address before they have the luxury of time to address creation of new tools. There is no one to lead the "charge!"

IPC will require policy and multi-lateral agreements between the participating nations, and these issues often vastly exceed the difficulties of solving the technical aspects of such a new service. These agreements require commitment from governments.

1) *Create policies on:*
   - Trust chain- authorization
   - Authentication
   - Accounting
   - Cyber-security
   - Mapping of levels
   - Abuse
   - Reserve capacity for national use

Because the conditions occurring result in the need for using IPC are rare, there is natural business driver for industry to implement on its own as a "money making" service for sale.

The continuously evolving landscape makes it difficult to draw a line in the sand as a starting point for requirement definition for IPC.

Ownership of such an international effort is problematic as it does not serve a nation's interest directly as does a national priority scheme, but is designed for cooperation between nations to collectively recover from a disaster. The impact of the absence of IPC has not been international gauged for:

- Critical Social – health and public services are not delivered
- Economic failures
- Policy failures
- Business failures

The "low probability" of a major earthquake, tsunami, and multiple damaged nuclear facilities all occurring at the same time in the same country would cause decision-makers to not develop a plan for such an occurrence, at least until after it has happened. While one can argue that the need for IPC may be low right now, the need will be great when disaster strikes. The ability to respond to this disaster will not be met unless IPC is already in place.

XI. International Priority Communications Recommendations- Next Steps

A. *Recommendation 1 – Championing the Need for Robust International Priority Communications*

Governments and other stakeholders should champion their need for international priority communications in international public networks.

Required Commitments:

- Governments must be committed to articulating their need for international priority communications to respond to crises to provide continuity of government.
- Private sector stakeholders must be committed to articulating their need for international priority communications to effectively respond to crises.[23]

B. *Recommendation 2 – Due Diligence for Modern International Crisis Management*

Governments should create and maintain the ability for authorized users to be able to communicate internationally over ubiquitous, public networks during times of congestion.

Required Commitments:

- Governments must be committed to ensuring effective essential communications during crises.
- Governments must be committed to identifying those public and private sector functions and respective individuals with vital roles during a crisis response and roles that are otherwise essential for continuity of government and continued operation of critical infrastructure.
- Network operators must be committed to cooperating with governments in operating and maintaining priority communications capabilities.
- Governments must be committed to participating in international standards development activities for international priority communications capabilities.
- Governments must provide funding to the private sector for international priority communications

[22] NSTAC, European Commission ARECI, IEEE Workshops – Europe, Australia. While not a complete list this does show a global interest

[23] Includes wireline, wireless and Internet transport. Includes voice, data and video applications.

capability and for its ongoing maintenance and administration.

C. *Recommendation 3 – Network Provisioning of IPC*

Network operators should cooperate with governments to implement and maintain priority communications services capabilities in their networks.

Required Commitments :

- Network operators must be committed to cooperating with governments in operating and maintaining priority communications capabilities.
- Network operators should participate in international standards development activities.
- Governments must provide funding for the capability and for its ongoing maintenance and administration.
- Governments must ensure a funding model for network equipment suppliers that provide the software capabilities.

D. *Recommendation 4 – Technology Deployment Leadership*

Network equipment suppliers should provide international standards-based software capabilities within their systems to support international priority communications capabilities.

Required Commitments:

- Network equipment suppliers must be committed to building network systems with priority communications capabilities.
- Network equipment suppliers must be committed to upgrading priority communications capabilities as standards evolve for new technologies and services.
- International standards development organizations must be committed to keeping international priority communications capabilities updated as new technologies and services are introduced.

E. *Next steps:*

Since we do not know when the next crisis will occur, we must accelerate the implementation NOW. Progress must occur more rapidly than it has been. We cannot afford to wait until the 2012 Summit to make meaning progress:

- Create an EWI working group to facilitate the policy agreements, create momentum and a sense of urgency.
- In order to increase interest in this topic, it would be useful to create a number of scenarios where priority communication would be needed to resolve a crisis, and because multiple countries are involved in various ways, an international priority scheme would be required.
- ID countries who are likely to agree.
- Catalog existing priority scheme capabilities in all the countries.
- Create a library of designs, implementations and best practices of regional / national solutions.
- ID the agency to work with and with authority to accept and international agreement in each country.
- ID evolving standards.
- Seek international platform for working the issue.
- Determine acceptable call completion rate.
- By and large, the needed technology and protocols are well understood at the international standards bodies. The emphasis now must be on creating an understanding by the policy makers in the various countries that this capability is needed NOW both within their country and between countries for cooperation in times of international crisis. Following this new awareness, plans for agreements and deployments can occur rapidly.

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