

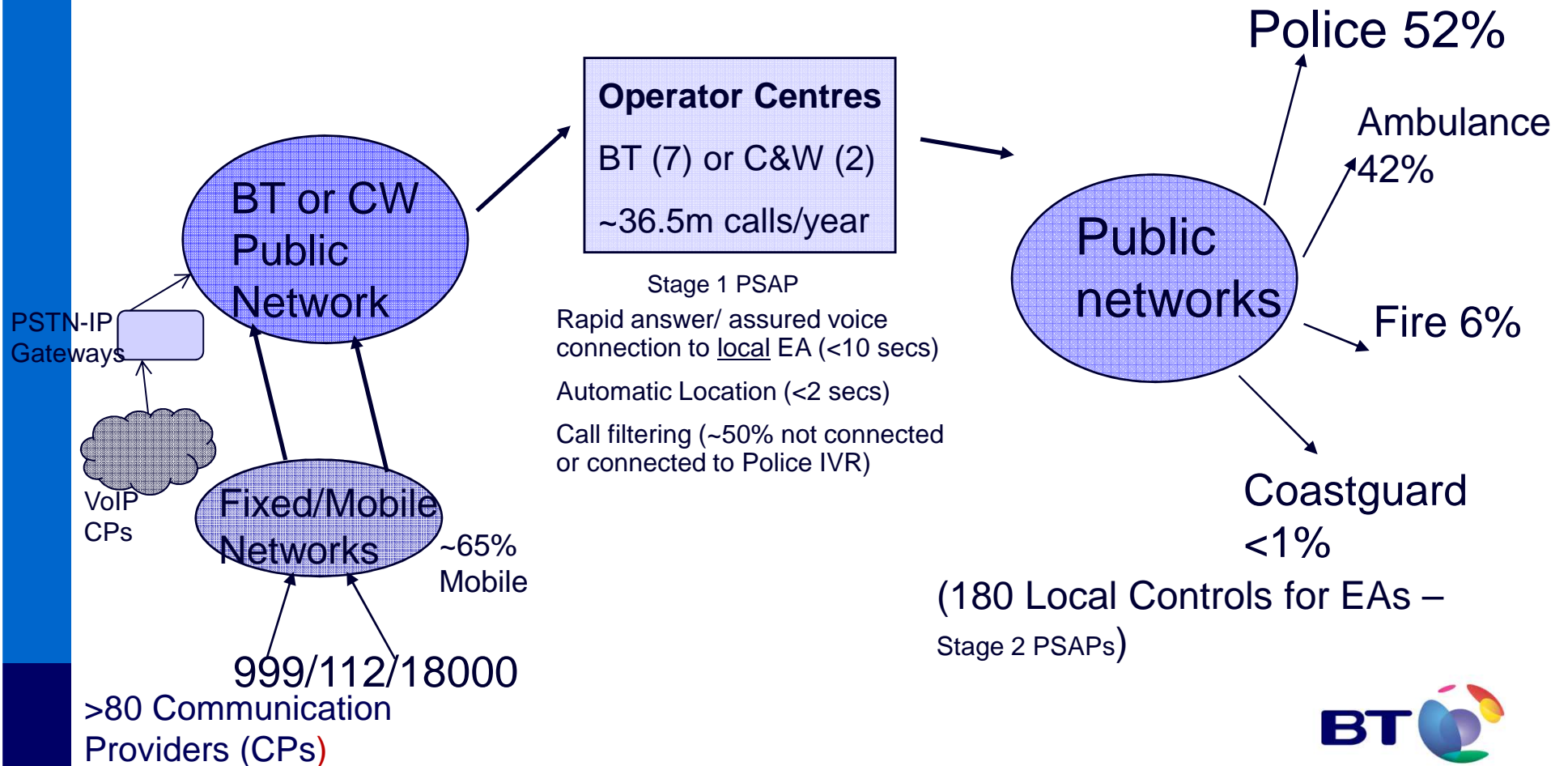
Location for Emergency Calls



NICC Open Forum 2012

UK Emergency Service

- 999/112 voice
- 18000 (ITUv21 text over voice, real time text using special terminals) for HoH
- eSMS for HoH
- Telematics in certain vehicles that includes a voice call + separate data call (SMS)



999 Service Drivers

- Regulation on all CPs (General Conditions) - free, resilience, location
 - GC 3: uninterrupted access to 999 (to greatest extent possible)
 - GC 4: free access to 999 and provision of location data to EAs
 - GC15: SMS access to 999 from mobile networks for hearing/speech impaired
 - Communications Act 2003 : failure reporting
- End Users, CPs (Fixed, Mobile,VoIP)+Emergency Authorities
- Governance - 999 Committee Chaired by DCMS and responsible for SLA document (Code of Practice) for call handling agents and emergency authorities
- Corporate Social Responsibility of CPs

The importance and challenge of location



Lives at risk and costly searches

- 999/112 callers often cannot clearly + quickly provide their location
- Fixed lines (WLR/LLU) – CP databases can provide a precise location
- Private Network Calls – increasingly cover a large number of sites: default location is main site → verbal routing, limited traceability
- VoIP – default locations → verbal routing, limited traceability
- Mobile networks provide caller's cell coverage : avg. ~12 sq km

Most pressing example :-

- Mobile calls take EA Control Rooms longer to establish location :-
 - on average calls take ~ 30 seconds longer than for fixed calls
 - can take 3 minutes of extra questions for stressed/injured victims
 - 330k cases where caller can't speak where response may be needed
 - about 36,500 critical incidents / year where long searches required
- Emergency services can spend 30 mins or more trying to find people.
 - Depending on the extent of the area being searched and its nature (urban, rural, coastal, offshore), hourly cost of searching ranges from :-
 - £300 for land teams, £1000 for a boat and £9000 for a helicopter.
- Even with land based searches of 30 minutes this represents an annual cost of £5million.....

Changing environment for delivering location

- **Location services still need developing**
 - full take-up and use of existing service by Police and Fire Services !!
 - more precise mobile locations (requires CP / handset changes) and more comprehensive location info (foreign roamers, Limited Service State callers)
 - reliable VoIP locations (needs “new CP” involvement, in particular ISPs)
- **Changes in calling devices** : Smartphones and PC/laptop/tablet applications ---> VoIP, but also instant messaging, pictures, video calling (eg Skype, Facetime), Social Networks(Twitter, Facebook),
- **Changes in services available on public networks**
 - as fibre reaches the edge of networks and WiFi access increases ---> more VoIP
 - Core networks at various stages of evolution (eg 4G for mobile networks)
- **Changes in EA equipment supplier technology** : IP based switches
 - switch upgrades will mean EAs do gradually move to IP networks (in own private network / LAN) for lower cost / higher convenience

Move to IP- based communications is happening at varying rates in 999 chain



Different media : helps EAs manage responses more efficiently.

POLICE The Met : “Valuable assistance” on 90% of calls in three main areas : Crime, Traffic and Disorder

- Identifying suspects, vehicles, crime scene bystanders
- Assessing seriousness of incident – eg Public disorder scale
- Preparing Responding officers - consideration of risks of attendance
Accident Assessment /traffic disruption

FIRE : CFOA - Potential for “tremendous benefits”

- The degree of damage, number/type of fire appliances necessary
- Ongoing update on incident’s nature and scale
- Automated translation of text

AMBULANCE

- Type of Injury : Triage, response planning
- Informed First Aid : Assist on site responders
- Better information for Doctors at Hospital

Careful management required :-

- Useful if adds timely, relevant information that reduces time to despatch
- Under control of call-taker (won’t always need visual help) => Pull
- Need to manage public expectation
- Greater value if visual information can be passed to responders



Improving the Quality and Efficiency of Response

Common benefits of using multimedia include:

- Quicker assessment of situation
- More comprehensive incident information
- More appropriate responses - people, equipment
- Improved interactivity with callers at the scene
- Better assessment of silent calls
- Preservation of multimedia data for post incident analysis



A picture is worth a 1000 words

Moving forward

- Devices, EAs and Public Networks will be increasingly IP based....and capable of supporting more than just voice
- IP connection end-to-end ---> option of different media negotiated at call set-up, or during the call : voice, video, real time text, video and text, pictures
- Long period of transition : mix of IP and TDM based communication
- Location – automated, precise, reliable - still the main challenge at every stage

What's happening in other Countries

USA – Next Generation 911

- NENA defines interfaces and functions for an EA Intranet (ESInet)
- PSAPs will accept voice, video & text (+ any combination)
- PSAPs in their own firewalled Intranet (ESInet)
- Many technical standards exist (largely IETF based) and being further developed / trialled
- US Government is making provision in terms of funds and FCC is consulting / regulating

EUROPE

- European Commission is driving various initiatives(CoCom/EGEA) : Total Conversation pilot, eCall with GPS location (all new vehicles by end 2015), Implementing 2010 review (more precise mobile locations), Mandate 493 (M/493) for VoIP Location (through ETSI)
- EENA is producing a document to define NG112 technical standards – first draft issued in April 2012 (based on NENA)



Standards Groups and location for the emergency services

- IETF : GeoPriv and ECRIT WGs
- NENA and NG911 :-
 - i3 standard and US Government programmes (DoT, Congress and FCC)
- 3GPP : IMS and NOVES
- IEEE 802 - ESWG (using IETF approach)
- **ETSI** – E2NA, formerly TISPAN EMTEL (working with 3GPP and EC), **M 493 mandate**
- NICC – especially EmLoc
- EENA – NG112 requirements

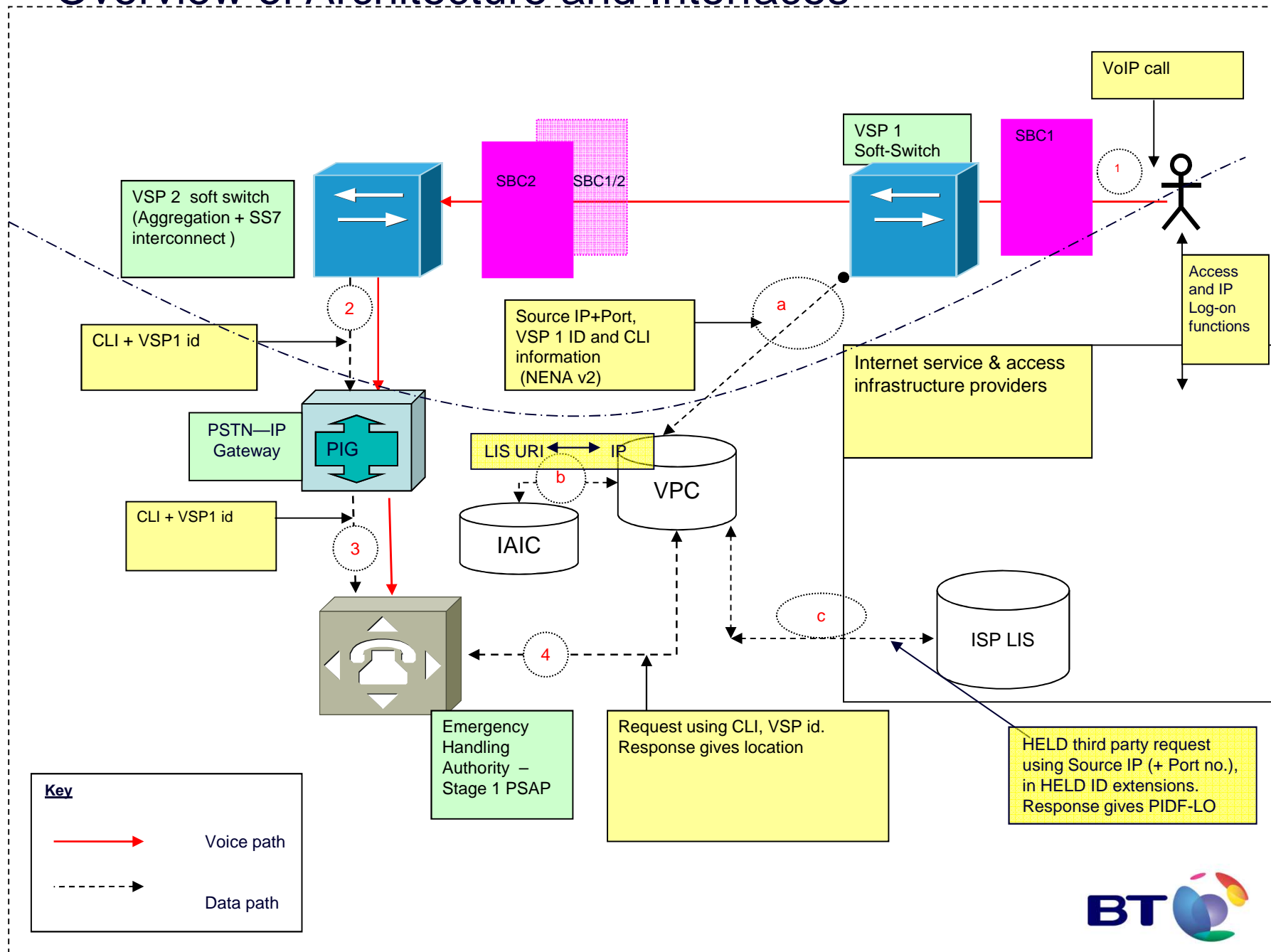
UK – status of location work

- Ofcom activity – implemented revised EU Framework in May 2011 + detailed location precision/reliability due to be reviewed in 2013 (consultation already in preparation)
- Cabinet Office – lead for UK Government in considering how to move to IP based emergency service
- NICC EmLoc WG
 - ND 1638** already published : technically possible butchallenges are to engage ISPs, ANPs
 - use cases : currently considering Private Networks
 - also reviewing international approaches to IP based emergency service
- Emerging trend is around use of end –user provided locations alongside network provided locations

** <http://www.niccstandards.org.uk/files/current/ND1638%20V1.1.2.pdf?type=pdf>



Overview of Architecture and Interfaces



Changes required

- VSP to develop new interface to PSAP
- ISP to develop LIS and new interface to PSAP, and in some cases to Access Network
- ISP and Access Network to ensure OSS/CRM systems kept updated and that real time systems (eg Radius Servers) exchange appropriate information
- 112 PSAP to develop VPC to bring together all information

Way Forward for UK 999 ?

- New requirements on all organisations (systems development)
- More organisations involved to deliver 999 – more diverse communication (not just traditional telcos providing physical access networks but VSPs , ISPs and terminal providers)
- New operational components could be : LIS (ISP + Access Ntwk) and a VPC (999 PSAP) for VoIP ; 999 App for mobile phones
- New interfaces for all organisations : based on international standards as far as possible (eg IETF HELD)
- New terminal capabilities : mobile handsets, in-vehicle units (ecall), routers
- Increased co-op and trust relationships between PSAP/VSP, PSAP/ISP and ISP/Access networks
- Timescales to implement uncertain : technically feasible, end user technology changes to drive it, leadership needed
- NICC EmLoc work to continue : eg more VoIP use cases documented

Questions – industry led, or regulation needed?

- How will mobile location be made more precise?
- Will ISPs / VSPs participate to ensure IP location can be provided?
- Will terminal equipment providers be engaged (handsets, routers)?
- How will Government lead – EA requirements need to be available??
- How does UK engage with EC (and EENA) to influence policy ??
- How can NICC best assist??

Any Questions??

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