

IPSphere

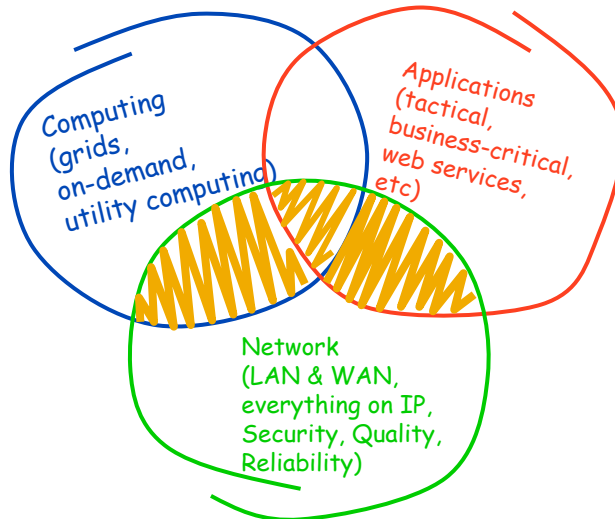
Jean-Marc Uzé

Juniper Networks

TF-NGN Meeting, July 29th, 2005

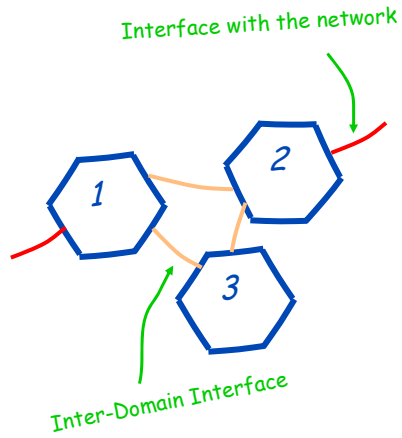


Working Together As Never Before



Juniper your Net

Towards pan-operator ubiquity



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- What's different ?



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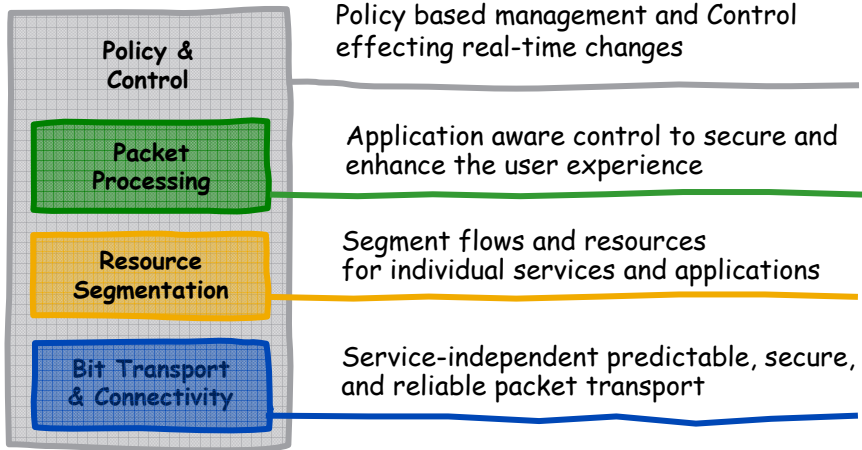
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Inside the Infranet

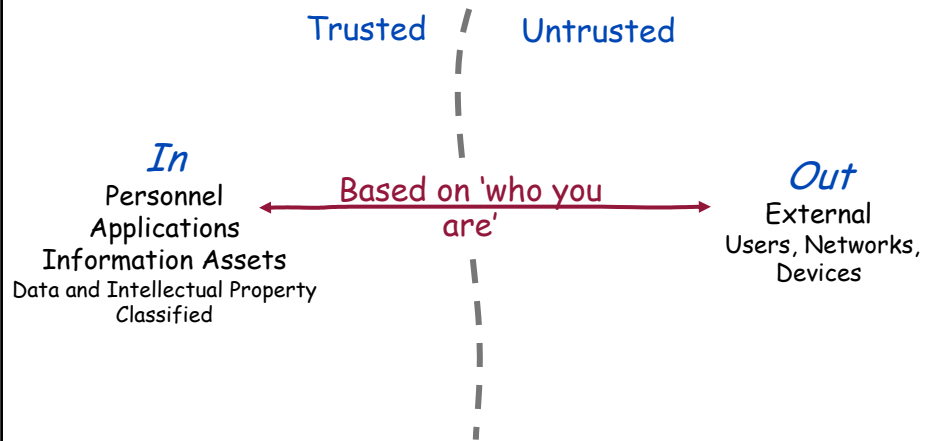


Infranet and the GRID

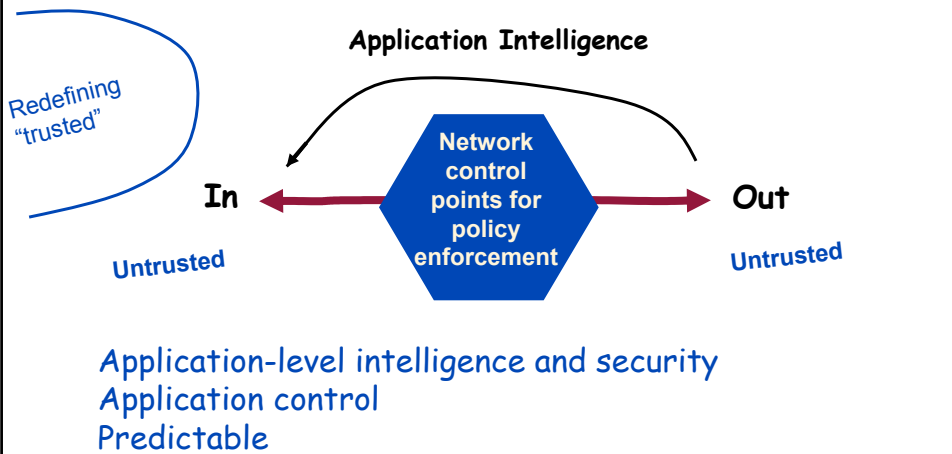
Convergence "all in one" ↔ Interoperability "end to end"

Trust ?

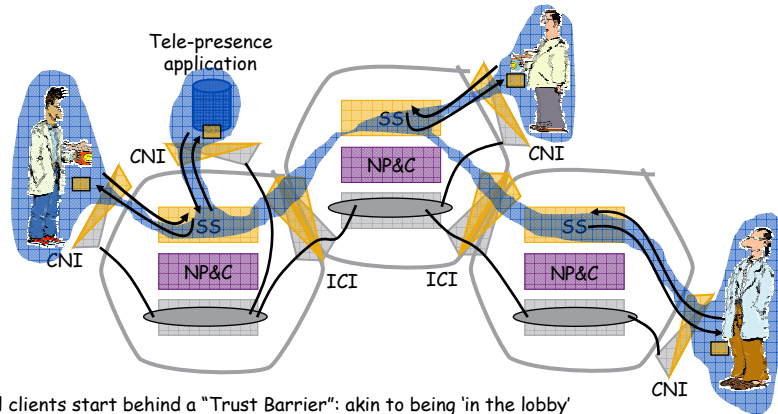
Status Quo Networking - Who you Are in converged Defence Networks



Throughout - Who You Are AND What You're Doing



Example Infranet Architecture



1. All clients start behind a "Trust Barrier": akin to being 'in the lobby'
2. To get inside clients present credentials, and receive authorizing "token": akin to a 'badge'
3. "Federate" other clients participating in the activity: akin to populating the 'meeting room'
4. Provide network environment for the exchange - akin to 'projector, whiteboard, audio...

Infranet: Home - Microsoft Internet Explorer

Address: <http://www.infranet.org/home>

Infranet Initiative

Beyond the Internet

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About the Initiative Learn About Infranets IIC Activities News & Events Join Infranet Initiative Council Member Login


 "Expanding premium business services and offering customers new applications requires an infrastructure that removes the limitations of today's internet and that offers connectivity along with QoS, reliability and security assurances. Underlying open standards will make the power of the Infranet a reality."
 Jochen Hagen | EVP, Product Management IP | T-Systems International

>> The benefit of the Infranet is its ability to reduce cost and complexity by providing service providers with a single secure infrastructure for all public and private services.

>> Special Report
 Three Service Architectures, Three Futures: A Study of the Effects of "Infranet" Principles on the Future of the US Telecom Market
 From CIMI Corporation [special report](#)

>> News
 DECEMBER 2 2004:
 Juniper Carves Infranet Dream [read more](#)
 SEPTEMBER 27 2004:
 What the heck's an inFRAnet? [read more](#)
 JUNE 16 2004:

EXECUTIVE LEVEL


Internet

A cross industry initiative - initiated by Juniper

IIC Achievements

Oct '03:
Infranet
call-to-action



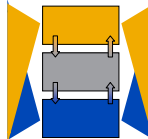
Feb '04:
IIC Cannes



March '04:
www.infranet.org



June '04:
IIC Chicago



Reference Architecture
proposed

Nov '04:
Infranet Use Cases

- Multi-provider VPN
- Fixed-Mobile
- Web Radio
- Web Video
- Software distribution



- Use case decomposition
- Ref Arch. mapping

Dec '04:
IIC Amsterdam



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IPsphere Forum

The initiative formerly known as Infranet

www.IPsphere.org

What's new ?

- Cisco and Alcatel join Infranet
- Move to a self-funded model
- Name: IPSphere

What's not new ?

- Scope and objectives of initiative
- Juniper will retain Infranet brand



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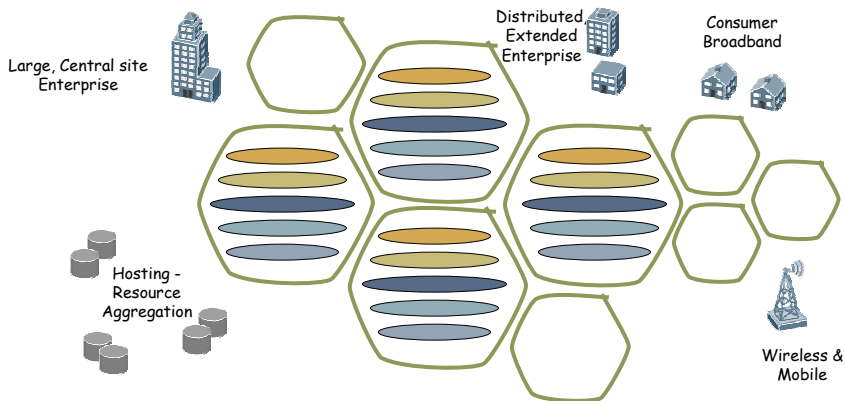
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The IPsphere Forum is an international, industry-wide, non-profit association of IT, telecommunications, networking companies focused on advancing the deployment of an IP infrastructure that enables both providers & users to meet their economic and technical needs optimally - for the broadest possible set of network, content and applications services

Multi-service IP infrastructures collaborating in a flexible, loosely coupled "honeycomb" fashion to deliver ubiquitous, valued network services in a business appropriate, maximally consumable manner



- Next Generation Networks
 - Underway with focus on traffic handling & Intra-operator policy & control work
 - Traffic handling
 - IETF
 - ITU-T
 - MFA
 - DSL Forum
 - Metro Ethernet Forum
 - PacketCable
 - Policy & control
 - 3GPP IMS
 - ETSI TISPAN
- IPsphere
 - Focus is to dissolve barriers to consumption of services enabled by NGNs
 - Expose network capabilities in business relevant manner (incorporate business parameters alongside technical parameters in published offers)
 - Enable network services to be offered & consumed in the same manner as IT services are-> heavy leverage of SOA, Web Services
 - Incorporate 'federation' mechanisms to ensure pan-operator ubiquity
 - Provide for service differentiation according to performance AND trust levels

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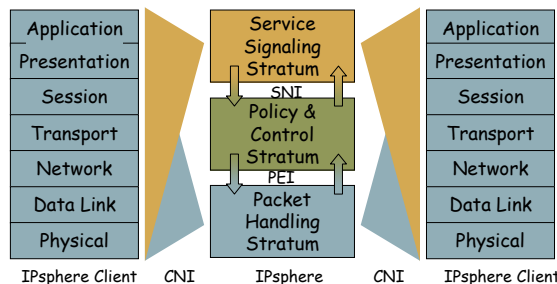
- Alcatel
- America Online
- Bezeq
- Brasil Telecom
- Brighthaul
- BT
- Cellcom
- China Unicom
- CIMI Corporation
- Cisco Systems
- Colubris Networks
- Datapower
- Ericsson
- fmc.service
- France Telecom
- GeoTrust
- Huawei
- Hewlett Packard
- IBM
- Juniper Networks
- Korea Telecom
- Level 3
- Lucent Technologies
- Masergy
- Nexagent
- NexTone
- Oracle
- Packeteer
- Polycom
- Qwest
- Red Zinc
- Siemens
- T-Com
- Time Warner Telecom
- T-Systems
- Telenor
- Tellabs
- Telstra
- Ulticom

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- Omar Elloumi, Alcatel, Secretary
- Keith Dickerson, BT, Board Member
- Monique Morrow, Cisco, Vice Chair
- Christian Jacquenet, FT, Board Member
- Yi Zhao, Huawei, Board Member
- Kevin Dillon, Juniper, Chairman
- Tom Walsh, Lucent, Treasurer
- Donal Morris, Red Zinc, Board Member
- Andreas Mueller-Schubert, Siemens, Board Member
- Roger Wenner, T-Com, Board Member
- Sten Nordell, Telenor, Board Member
- Andy Malis, Tellabs, Board Member

- Most recent meeting: Chicago, June 9-10 2005
- Next meeting: Europe: September 12-13 2005
- IPsphere work builds upon and conforms to IETF, ITU-T, MFA, IMS etc. specifications
- Working Groups
 - Reference Architecture WG
 - Business Dimensions WG
 - Use Case WG
 - Standards synergies WG
 - IPsphere Showcase WG
 - Publication WG

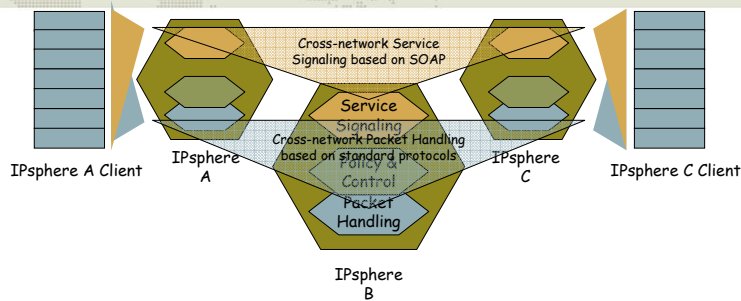
- Architect for today's Internet to be a service of the overall IP infrastructure, rather than the Internet itself being the infrastructure. In this sense, the permissive, best effort Internet service is presented as a 'virtual environment,' alongside other environments presenting more predictable, trusted network services
- Provide for any of the services of a network operators' IP infrastructure to be federated (or interconnected) with other operators according to clearly defined business relationships, incorporating mechanisms for revenue settlement and SLA accountability
- Ensure that users of the IP infrastructure can access only the presented services, and not the underlying infrastructure itself, to sustain the reliability and integrity of the overall federated system of networks



Today's networks are modeled on a seven-layer OSI architecture, but only the lower three layers are represented in the network infrastructure. The basic model of the IPsphere is to map the seven OSI layers to the packet handling stratum, meaning that they are transported by the IPsphere. However, the IPsphere recognizes that within the exchanges at these layers may be service signals, meaning requests for the network to do something on behalf of the user. These requests, in the Internet model, are simply passed on for action by the network and this may result in providers being asked to make significant resource commitments for which there is no business relationship to justify. The IPsphere model adds a layer of policy management, coordinated by a new layer, the Service Signaling Stratum. This new layer exchanges business context among providers, and also between providers and customers. These business-level exchanges then guide the way that the network handles control exchanges, and thus guides the way the network responds to service requests.

Inside the IPsphere

IPsphere Forum



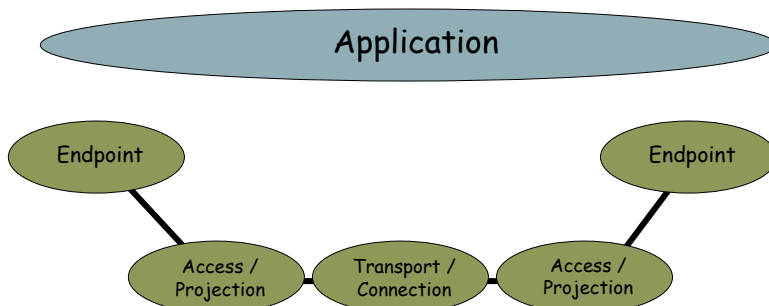
The IPsphere is made up of a federation of providers who share a Service Signaling Stratum connection for business coordination. These providers are interconnected with each other at convenient points via IPsphere-compliant Inter-Carrier Interfaces (ICIs) and with their customer via IPsphere-compliant Customer-Network Interfaces (CNIs). The interconnected networks use standard packet protocols for signaling for services, but at key points in each network there is a "trust barrier" where policy management must be applied in order for service signals to pass. These key points allow the providers to insure that services created across their combined networks meets the business standards set by each.

A provider makes an explicit decision to participate in a pan-provider service, and that decision is communicated by having the provider publish a list of "Elements" that represent services and roles the provider is willing to accept. These are combined with Elements from other providers to create services.

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Decomposition Model for Services

IPsphere Forum



A typical application or service is made up of a series of "Elements" from one or more of the classes shown above. Endpoint Elements represent either service users/access points or content/processing capabilities (storage, grid, ASP, etc.). Access/Projection is the Element that represents the "last mile" connection to the user; it could be DSL, cable, wireless, etc. Transport/Connection represents the core network.

Each Element used to create a service is contributed by a provider by publishing it via the Service Signaling Stratum. The process of service creation in the IPsphere model is the process of assembling published Elements into services/applications.

An Element is also a software link between the IPsphere's business-layer functions and the control behavior of the network.

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A Quick Summary of Principles

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- The IPsphere divides a service into Elements, which include Access/Projection, Transport/Connection, Content/Processing, and users/access point. A given service may have any number of elements of any of these types as needed, and services are created by combining Elements contributed by providers.
- A provider participating in the IPsphere will contribute at least one Element for at least one service, but will likely contribute many elements for many services.
- The contribution will be made by publishing a set of web services onto the SSS VPN, supporting all of the components associated with each element/service combination the carrier supports.
- The creation of a pan-provider service involves a web-service-based exchange of messages between the administrative owner who coordinates the service on behalf of the customer, and the providers who contribute elements to the service.
- Each Element is a software "method" or module that is published as a web service and which links to underlying network management or policy management capabilities to actually control the service.
- This process takes place at the Service Signaling Stratum level of the IPsphere Reference Architecture.

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What the IPsphere Is...and Isn't

IPsphere Forum

- The IPsphere is a model for putting network services into a business context by linking service creation with service ordering and fulfillment.
- The IPsphere is based on web services principles for the exchange of business information, making it easy for it to manage the elements of higher-layer services that require identity management and reliable communications, including grid computing and ASP services.
- The IPsphere is not a strategy to create services on the network, provide QoS, or manage resources at the physical level. It is compatible with most emerging standards, and the IPsphere will work to ensure it stays that way.
- The IPsphere is not an alternative to the Internet, it is an alternative to the Internet model applied to non-Internet services.

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Thank You



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NETWORKS