mobility
pocket guide

innovation. powered by
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The Cisco IIN

IIN

The Intelligent Information Network is Cisco’s vision and technology strategy for developing and communicating the role of the network to enable a more intelligent IT infrastructure that better enables IT and business process optimization...

Cisco Mobile Vision

IPNGN

The Mobile IP NGN is the messaging programme used to explain Cisco’s overall strategy and vision for the evolution of Mobile operators businesses and networks. Ultimately, it is a vision of application, service, and network convergence around intelligent IP solutions.

Cisco Systems®, IP NGNs bring about a broad network transformation that encompasses not just the service provider’s network but its entire business. The Mobile IP NGN can enable service providers to meet all the needs of all customer segments efficiently and economically and be the basis for delivering applications that enable sustainable profitability.
# GMV Components

## Service Exchange Framework

### Business Value Proposition
- Providing greater network and business control to the Mobile Operator
- Customer loyalty and stickiness through ubiquitous rich media applications
- Triple Play On The Move
- Application Aware Service Platform
- Highly flexible charging platform creates new revenue streams
- Demand based capital investment

### Technology Value Proposition
- Mobility Service Management
- Flexible Policy Management and Enforcement
- Deep packet inspection able to analyze, optimize, secure, and meter all traffic flows, including content-based services
- Bandwidth Policing
- Traffic Security
- Multi Dimensional Identity Management
- Dynamic Session Management
Network Convergence

- IP Core Transport
- Cisco In The RAN
- Wireless Access

Business Value Proposition
- Network operations efficiencies
- Rapid service introduction
- Architectural simplicity
- Open, standards-based solutions

Technology Value Proposition
- IP RAN leadership
- End-to-end security (self defending network)
- End-to-end QoS
- 5 x9s Availability
- Open, standards-based solutions
- Leader in IP based Standards development

Application Convergence

Business Value Proposition
- Consumers and business: any service, any device, anywhere
- Flexible billing support (pre-paid/post-paid services)
- Moving up the value chain with the customer
- Integrated Networks, Content, and Business/Consumer Services
- Intelligent networking enables business success

Technology Value Proposition
- Subscriber awareness
- Content awareness
- Application awareness
## Mobile Vertical Applications

### Public Sector - IPICS

<table>
<thead>
<tr>
<th>Business Value Proposition</th>
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</thead>
<tbody>
<tr>
<td>- Instant communication with the right people in time of crisis</td>
</tr>
<tr>
<td>- Network Extension to the vehicle</td>
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<tr>
<td>- Enhanced identification capabilities &amp; security</td>
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<tr>
<td>- Increased officer safety</td>
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<tr>
<td>- Operational efficiencies</td>
</tr>
<tr>
<td>- Push national alerts (i.e. Amber Alert) to designated groups</td>
</tr>
<tr>
<td>- Legacy investment protection</td>
</tr>
<tr>
<td>- Less than 10% - 15% of the cost of radio replacement</td>
</tr>
<tr>
<td>- Dynamic Session Management</td>
</tr>
</tbody>
</table>

### Voice Interoperability:
- LMR Interoperability
- Push-to-talk everywhere
- Low cost, IP standards-based solution

### Data Interoperability:
- Rapid information interoperability
- Instant Messaging
- Application sharing via MeetingPlace
- GIS integration

### Video Interoperability:
- Video (surveillance) interoperability

### Control Interoperability:
- Sensor integration and telemetry
- Radio network & end point control
- RFID support
- Integration with BMS
- Presence aware networks
Entertainment - i-Stadium

Business Value Proposition
- Automated ticket purchase
- Seat allocation
- Club portal access/match data
- Internet access & e-mail
- Promotional offers/advertising
- Retail purchasing
- Betting
- Premier league match data
- Video replays
- Gaming
- Printing
- Location determination
- Video Surveillance
- Provides branding opportunities

Technology Value Proposition
- Cisco 802.11 technology delivers real time infrastructure to securely support multiple vertical applications
- Introduction of RFID enabled readers and smartcards
- Future Introduction of RFID enabled mobile phones
- Enables Mobile payment using Smart Cards and in the future Mobile phones
- Enabling multiple applications running on top of PDA/Smartphones
### Transportation

<table>
<thead>
<tr>
<th>Business Value Proposition</th>
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</thead>
<tbody>
<tr>
<td>• Improve system efficiency for increased customer satisfaction</td>
</tr>
<tr>
<td>• Increase physical safety through networked applications</td>
</tr>
<tr>
<td>• Reduce costs associated with legacy applications</td>
</tr>
<tr>
<td>• Increase ridership through new or improved services</td>
</tr>
<tr>
<td>• Improve communications between related city agencies</td>
</tr>
<tr>
<td>• Build a network foundation that adapts to new applications and technologies</td>
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</tbody>
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<table>
<thead>
<tr>
<th>Technology Value Proposition</th>
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</thead>
<tbody>
<tr>
<td>• Extending Broadband Wireless &amp; Wired IP Networks to Outdoor &amp; Mobile Environments</td>
</tr>
<tr>
<td>• Seamless Mobility &amp; Continuous Access</td>
</tr>
<tr>
<td>• Network Security, Scalability &amp; Manageability</td>
</tr>
<tr>
<td>• Standards Based Solution with Interoperability &amp; Investment Protection</td>
</tr>
<tr>
<td>• Network scalability and management to allow Wireless mobile data networking for network in motions applications</td>
</tr>
<tr>
<td>• Network access based on users or applications</td>
</tr>
<tr>
<td>• Wireless connectivity to fixed &amp; mobile locations/applications</td>
</tr>
<tr>
<td>• Interoperability and integration between individual networks applications</td>
</tr>
<tr>
<td>• Integrated network security across the entire network</td>
</tr>
<tr>
<td>• Use of licensed and un-licensed wireless technologies</td>
</tr>
<tr>
<td>• Network foundation for future wireless technologies and applications</td>
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</tbody>
</table>
Public Sector - Metro Mobile

Value proposition for public safety
- Dispatch
- Field reporting, premise history lookup
- Car-to-car messaging
- Auto Vehicle Location/Mapping
- Pictures, criminal database/history
- E-Ticketing
- Vehicle telematics
- Situational video transmitting and receiving
- Send/receive medical data
- Hazard material monitoring

Value proposition for Municipality workforce
- System monitoring of telematics, video surveillance of sites
- IP meter reading and traffic signal control
- Enhance worker productivity with real-time scheduling and route assignments (e.g., start-of-day) and field reporting (e.g., end-of-day, end-of-job)
- Licensing Capability to remotely download and review drawings, building codes, and previous building violations
- Parking control and ticketing
- Congestion control

Value proposition for transportation agencies
- Video surveillance streaming and Digital Video Recorder from the vehicle
- Emergency call boxes using IP video and VoIP
- Automatic Vehicle Location (AVL) mapping and schedule status
- Passenger informational services and advertising
- Passenger Internet access
Public Sector - Metro Mobile continued

Technology Value Proposition

- WLAN and Cellular technologies
- Mobile IP for seamless roaming
- Wireless LAN voice services
- Rapid information interoperability
- Location base services
- Mobile Access Router
- Security services
- CCX comply access devices
GMV Solutions

Education - WLAN+PWLAN

### Business Value Proposition
- Reduce/optimize costs in running the campus network
- Offer latest technology on campus
- Provide a leading-edge educational environment
- Realize efficiency gains in internal administration
- Complement/extend the existing fixed LAN infrastructure on campus
- Anytime anywhere learning - allow for campus-wide access to all relevant campus resources (directories, time tables & lecture schedules, information bulletins)
- Support new applications like online lectures and/or e-learning
- Give more flexibility to students and staff
- Enhance collaboration
- Compelling, state-of-the-art end-to-end solution delivered by industry-leading partners
- Flexible approach that can be tailored to meet individual requirements

### Technology Value Proposition
- WLAN/PWLAN builds foundation for converged services
- WLAN telephony as replacement for fixed PBX or DECT
- Future introduction of dual mode phones
- CDN network for E-learning
- Location based services
- CCTV for security and surveillance
- CCX Complied Laptops
- VPN
### Service Exchange Framework

#### Content Filtering

<table>
<thead>
<tr>
<th>Business Value Proposition</th>
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<tbody>
<tr>
<td>- Protecting users on the Mobile Internet</td>
</tr>
<tr>
<td>- Meet governmental and self regulation for content control</td>
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<tr>
<td>- Corporate service for usage management</td>
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</tbody>
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<table>
<thead>
<tr>
<th>Technology Value Proposition</th>
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<tbody>
<tr>
<td>- Flexible policy management and enforcement</td>
</tr>
<tr>
<td>- Extensive protocol support such as HTTP 1.0/1.1, HTTPS (based on destination IP address), WAP 1.x/2.0, FTP, RTSP</td>
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<tr>
<td>- Extensive URL database</td>
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</table>

#### Content Billing

<table>
<thead>
<tr>
<th>Business Value Proposition</th>
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<tbody>
<tr>
<td>- Control subscriber access to services</td>
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<tr>
<td>- Deliver pricing capabilities that differ per service per event</td>
</tr>
<tr>
<td>- Customer loyalty and stickiness</td>
</tr>
<tr>
<td>- Maximise revenue generation</td>
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<tr>
<td>- Cisco is the market leader in Content Services Gateways</td>
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<table>
<thead>
<tr>
<th>Technology Value Proposition</th>
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<tbody>
<tr>
<td>- Flexible policy management and enforcement</td>
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<tr>
<td>- Multi dimensional identity management</td>
</tr>
<tr>
<td>- Deep packet inspection allowing the operator to analyze, optimize, secure, and meter all traffic flows, including content-based services</td>
</tr>
<tr>
<td>- Single open platform for service insertion</td>
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Seamless Roaming

**Business Value Proposition**
- User simplicity
- Delivering control to the Mobile operator
- Innovative new rich multimedia services
- Uninterrupted location status of all mobile users
- Enables “push” services and applications

**Technology Value Proposition**
- Layer 3 mobility independent of existing layer 2 schemes
- Leverages open standard mobile IP
- VPN Continuity
- Reverse tunnelling creates bi-directional anchor
- High availability platform for large scale networks
## Cisco In The RAN

### Backhaul Optimization - GSM/UMTS

**Business Value Proposition**
- Optimization technology at cell site increases bandwidth efficiency and saves E1 costs
- Allows UMTS deployment using existing E1 leased line(s)
- Efficiently supports multiple generations of radio technologies (2G, 3G, 4G)

**Technology Value Proposition**
- Optimizes Abis (GSM) and Iub (UMTS) traffic
- Integrated solution for HSDPA offload
- Extending intelligent IP connectivity to the cell site
- Environmentally hardened, compact router for easy cell site deployment
- Consistent with 3GPP evolution towards an all-IP RAN

## EV-DO Aggregation

**Business Value Proposition**
- IP over T1 aggregation device is required in order to implement EV-DO. RNC does not have this aggregation ability intrinsically
- ESR 10k is differentiated by superior performance and high availability at a competitive price

**Technology Value Proposition**
- Superior performance to competitive products
- Low Latency QoS
- Channelized OC3 capability
- High Availability
- Supports migration to an IP RAN
- Cisco 7200 and 7600 platforms may also be used to implement this solution, depending on local requirements
**Alternative Backhaul - HSDPA**

<table>
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<th>Business Value Proposition</th>
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<tbody>
<tr>
<td>• Replaces expensive E1 circuits with low cost data transport (xDSL or Ethernet)</td>
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<td>• Easier to rapidly provision unforeseen increases in bandwidth demand</td>
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<tr>
<td>• Applicable as both a leased line and microwave alternative (saves CapEx)</td>
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<table>
<thead>
<tr>
<th>Technology Value Proposition</th>
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<tbody>
<tr>
<td>• Cisco solution is able to combine HSDPA Offload with RAN Optimization and IP routing capability at the cell site</td>
</tr>
<tr>
<td>• Environmentally hardened compact router for easy cell site deployment</td>
</tr>
<tr>
<td>• MWR-1941 provides an integrated solution for lub and GSM voice optimization as well</td>
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**Optical RAN Aggregation**

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<th>Business Value Proposition</th>
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<tr>
<td>• OpEx saving over pure hub and spoke leased lines between RNC/BSC and Cell Site. Many mobile operators have not yet implemented this basic form of aggregation</td>
</tr>
<tr>
<td>• Enhanced economics for HSDPA deployment</td>
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<table>
<thead>
<tr>
<th>Technology Value Proposition</th>
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<tbody>
<tr>
<td>• ONS 15454 is also the aggregation platform for both the Backhaul Optimization and the HSDPA Backhaul solutions</td>
</tr>
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### Pseudo-wire in the RAN

**Business Value Proposition**
- Alternative to ATM switches in the RAN Core
- Obviates the need for both an ATM and an MPLS core
- Reduced Opex resulting from converged multi-service core

**Technology Value Proposition**
- Leverages AToM capability to replace an ATM core
- ATM over MPLS is superior to MPLS over ATM due to industry trend towards IP. IP traffic will soon be far more common in the network and therefore it should be the native transport protocol

### IP PoP in the RAN

**Business Value Proposition**
- Operator leverages existing asset of geographical points of presence, to deliver a variety of services from locations throughout the RAN
- Operator can offset the cost of deploying additional bandwidth in the RAN (even fibre) based on revenue generated by new IP services
- Operator also has ability to deploy IP-based cell site security and monitoring solutions (card reader, web cam, DCN etc.) for more efficient anagement and reduced OpEx

**Technology Value Proposition**
- Due to current industry trends and available development and integration expertise, IP is the best transport solution for rapid and cost-effective service deployment
- IP PoPs in the RAN are consistent with a converged end-to-end NGN strategy
## Wireless Access

### Commercial 3G/UMTS

**Business Value Proposition**
- Increase in productivity, where mobile teams have instant access to their corporate networks
- Save time, as this portable network solution is quick, easy to set up
- Little or no IT support is needed

**Technology Value Proposition**
- 3G/UMTS combines the benefits of ubiquitous Wireless Access via WiFi with the mobility provided through 3G/UMTS. It also provides the security of a private network, so even if a service traverses a public network (e.g., the internet), it will be partitioned in such a way so that only its traffic uses certain resources effectively making a private network within a public one

## Rural Broadband

**Business Value Proposition**
- Easily integrated with existing mobile systems
- Increased return on investment from existing base station real estate, backhaul bandwidth, etc
- Rural Broadband is a natural extension to existing PWLAN offerings
- Consistent with Multi-Access service over common IP network strategy

**Technology Value Proposition**
- Cisco 802.11 technology can deliver a cost effective, scalable solution today
- Re-use of existing authentication and billing engines (e.g., PWLAN CMX)
- Point to point and point to multipoint configurations
- Highly secure connectivity
WiMax

Business Value Proposition
- The IEEE 802.16 working group is investigating standards for fixed and mobile broadband wireless access. Fixed version has been ratified but mobile version still under development
- Use for Backhaul of cell sites and hotspots
- Alternative broadband access to compete with Wireline operator in rural areas
- Increase data capacity in dense metro areas using Mobile WiMAX
- High velocity broadband access (in trains)
- E1/T1 service for SME
- Hot zones for public safety
- Backhaul of WiFi/Mesh hotzones

Technology Value Proposition
- The WiMax Forum aims to promote certified products firstly to operators for use in their transport networks and later to end users
- Pre WiMAX products (802.16-2004) are available today
- WiMAX certified products expected in Q4CY05 (base station and CPE) for 802.16-2004
- IEEE 802.16e (mobile) is expected to be ratified in 2HCY05
- Intel Rosedale (802.16-2004) chipset is shipping today
- Intel Centrino (802.16e) expect in CY07

Managed WLAN

Business Value Proposition
- MWLAN helps Mobile carriers establish relationships with IT Managers, hence attract businesses customers
- MWLAN helps Wireline carriers to add mobility to their existing offerings
- Dual mode phones and MWLAN can help retain Voice traffic on the Service Providers network
- MWLAN assists Service Providers in offering a proposal aimed at controlling businesses costs
Managed WLAN continued

- MWLAN builds foundation for Converged Services
- Introduction of Dual Mode handsets precipitates GAN service offering
- MWLAN in conjunction with UMA overcomes risk of poor indoor coverage from conventional mobile service
- MWLAN ensures enterprise has sufficient QoS to enable simultaneous Voice and Data services

IP Core Transport

IP MPLS

Business Value Proposition
- Converged network platform for network operational efficiencies
- Architectural simplicity
- Reduced OPEX
- Rapid Service Introduction & Deployment

Technology Value Proposition
- Industry leading IP/MPLS technology
- Largest installed based of routing and switching portfolio with leading hardware and software innovations
- Multi-terabit scalability
- Multi-service scalability
- Carrier Class availability
- Industry first secure virtualization
- Superb service flexibility and multicast support
- Security & QoS