NetMotion Wireless

- Software company focused on wireless workers
- Headquarters: Seattle, Washington
- Sales Offices in Frankfurt, Paris and London
- 100+ employees, founded 2001
- 1600+ customers, 450,000 licenses
- Market leading Mobile VPN
- 97% customer maintenance renewals
- 25+ industry awards for VPN technology
- Offer 24/7 support
NetMotion Government Customers in Arizona

- Arizona Public Service Company
- Arizona State University
- Cable One, Inc.
- City of Avondale
- City of Casa Grande
- City of Chandler
- City of El Mirage
- City of Glendale - Field Force
- City of Goodyear
- City of Lake Havasu
- City of Maricopa Police Department
- City of Mesa Police Department
- City of Mesa Traffic Engineering
- City of Peoria
- City of Phoenix
- City of Scottsdale
- City of Sedona
- City of Surprise
- Coconino County
- County of Pima
- Discount Tire CO. Inc.
- Drs. Goodman & Partridge, OB/GYN, PLLC
- Eloy Fire District
- Gilbert Police Department
- Glendale Police Department
- Maricopa County Sheriff
NetMotion Government Customers in Arizona

- Northwest Fire District
- Pascua Yaqui Tribe
- Phoenix Police Department
- Pima County Sheriff
- PMT Ambulance
- Santa Cruz County
- Shasta Pools
- SuperShuttle International, Inc.
- TERROS
- Town of Buckeye
- US Airways
- US Foodservice, Inc.
- Yavapai County
- Yuma County
Mobile Worker Challenges

- Wireless networks are slower than wired
- Wireless networks disconnect: Interference & gaps
- Workers need to move from one network to another easily
- Reauthenticate and restarting applications takes time
- Complexity
- No easy access to IT help desk
I.T.’s Mobile Deployment Challenges

- Need to **secure** mobile devices on multiple networks
- Need to **manage** mobile devices on multiple networks
- Visibility into **what** mobile workers are doing
- Make easy for Mobile Workers
- Existing Applications Not Designed for Mobility or Wireless
- Help Desk /Trouble Shooting
Mobile VPNs

*New Category Emerges to Address Mobile Challenges*

- **Like Legacy IPSec and SSL VPNs....**
  - Uses standards based security for authentication and encryption

- **Unlike Legacy IPSec and SSL VPNs....**
  - Designed for dynamic mobile workers
  - Addresses productivity pain points
  - Security and management platform independent of network and applications
  - Holistic support for smart phones, handhelds, ultra mobiles, tablets and lap tops.
  - Removes barriers to mobile device adoption

"From our vantage point, NetMotion Wireless is the clear leader in the space."
— Tony Rizzo, Director, Mobile Research with The 451 Group
Mobile VPN – built for wireless
- Client and server software
- Designed for dynamic mobile workers
  - Laptops, smart phones, handhelds, tablets
  - Removes barriers to mobile device adoption
- Complements existing IT systems & mobile deployments

**Security**
- Industry standards

**Productivity**
- Enhance worker productivity

**Management**
- Centralized control and visibility
Platform Support

- **Windows Server**
- **Windows Clients**
  - XP, Vista, Windows 7 (laptops & tablets)
  - Windows Mobile / Smartphone / CE

- 90%+ of base are using Wireless WAN
  - Often roaming to Wi-Fi
- Estimate 70%+ of base using laptops
Security

« Mobile Certification
  ▪ First VPN certified on Windows Mobile 5 Smartphone

« Encryption
  ▪ FIPS 140-2 Validated 128, 192 or 256-bit AES Encryption

« Authentication Protocols
  ▪ MS Active Directory
  ▪ RADIUS, RSA SecurID
  ▪ CAC / PIV Smartcard/PKI two factor

« Periodic Reauthentication
  ▪ A speed bump, not a stop sign
  ▪ Seamless reauthentication for mobile workers without disrupting application sessions

« Lock-down clients
  ▪ Ensure traffic is routed through the tunnel
  ▪ Access to & from device ONLY through encrypted tunnel
  ▪ Complimentary to client firewall

*TM: A Certification Mark of NIST, which does not imply product endorsement by NIST, the U.S. or Canadian Governments
Security

- Quarantine Devices and/or Users
  - Quarantine NEW Devices – keeps unapproved devices off the network
  - Prevent lost or stolen devices from accessing the enterprise

- Control application access by user group or device

- Network Access Control
  - Prevents or allows user connection based on client’s compliance to corporate policies
  - Client evaluates → Server enforces
    - Allow | Warn | Remediate | Disconnect | Quarantine
    - Integrates with Policy Module for ‘smart’ remediation
  - Wizard interface creates common policies in minutes
Mobility XE

VPN Operates as a Service
- Eliminates the step of launching a VPN application
- Session Persistence
  - No lost data or application crashes caused by coverage gaps or suspend & resume operations

InterNetwork Roaming
- No need to re-login or restart VPN or applications
- Applications pick up exactly where they left off

Network Optimizations
- 1 to 3x improvement in effective throughput
- Real-time application enhancements

Best Bandwidth Selection
- Automatically builds the tunnel over the fastest available interface

Corporate Office
Application Server
NetMotion Server
SQL
Application Server

Which users are reachable, disconnected or unreachable?

Without QoS Policy
Mobility VPN tunnel

Which applications are consuming the most bandwidth?

With QoS Policy

Quality of Service (QoS)
- Prioritize applications to achieve effective access across low bandwidth networks
- Prioritize applications based on QoS policy
- Enables end-to-end QoS, ensuring applications are prioritized accordingly

Policy Management
- Created centrally
- Enforced on the device
- Application-level control
- Control which apps are accessible based on network, device, user rules

Mobile Analytics
Detailed Reports on:
- Applications
- Users
- Networks

Network Access Control
- Highly configurable, confirms device compliance
- Verify device has current software & patches
- Ensures security measures are enabled

Security
- Multi-Factor Authentication:
  - Lock down device—remove option to bypass VPN
- Encryption:
  - FIPS 140-2 validated AES

Quality of Service (QoS)
- Prioritize applications to ensure access across low bandwidth networks
Productivity

Only security product that enhances mobile worker productivity. Saves time ...
- ... by eliminating VPN and application disconnects
- ... by replacing “shut-down” with “suspend”
- ... by eliminating need to launch a VPN
- ... by speeding up applications
- ... by eliminating need for multiple VPN profiles
- ... by providing real-time access to more applications

Improves IT productivity
- Straight forward installation and maintenance
- Eliminates VPN client configuration issues
- Fewer support calls
- Provides unified security & mobility platform for any internally developed applications.
- Device management
Management

Policy Management Module

**Conditions**
- BSSID
- DNS server address
- DNS server name
- Connection name
- Mobility client version
- Interface name
- Interface speed
- Local address
- NAC status
- OS Version
- Registry value
- Schedule (date, time)
- SSID
- NMS un/reachable for X seconds
- Externally-set condition
- WINS server address

**Target Actions**
- Allow (Apps/Addresses/Ports)
- Block (Apps/Addresses/Ports)
- Disconnect (Apps/Addresses/Ports)
- **Pass through** (Apps/Addresses/Ports)
- QoS (Apps/Addresses/Ports)
  - DSCP
  - Traffic Shaping
  - Queuing
  - Real-time Protocol (Packet Loss Recovery)
- Balloon notification

**Other Actions**
- Start application (command line)
- Local networking
- Override Interface Speed
- Hide interface
- Disable roaming
- Add Static Route to address
- Web image acceleration (Apps/Addr/Ports)
Management

Network Access Control + Policy

NAC Compliance Checks:
- Antivirus ✓
- Antispyware ✓
- Firewall ❌
- OS Version ✓
- Windows Updates ✓
- Registry Keys ✓
- Process & Files ✓
- Mobility Client Version ✓

Corporate Network

Application Server

Mobility Servers

Policy
Allow App
Block All
Else

NetMotion Mobility

Warning! No client firewall detected.
Summary

Delivering on ROI

**Enhanced Security**
- Same level of encryption and authentication as legacy VPNs
- Lock-down clients
- NAC Module

**Improved Productivity**
- Completely transparent to end-users
- Shields end-users from challenges created by wireless networks and mobility
- Dramatically reduce calls into help desk
- Easy to deploy and maintain

**Better Management**
- Granular visibility into your mobile deployment
- Complete application level control of data in transit
Mobility XE Evaluation Program Offer

- Download and evaluation full production software
- 30-day time period, up to 100 mobile devices (can be modified as appropriate)
- NetMotion Wireless Systems Engineer works with customer throughout the process
- Technical notes, phone support and in many cases on-site support provided
- Temporary keys are converted to permanent license keys following a purchase
- No contracts or fees associated with evaluation program
Questions?
Server

**Windows 2003 Server**

- Installs in about an hour – requires reboot
- Minimum Intel-compatible Pentium 4, 2.0 GHz
- 2GB of RAM; 5GB of disk space
- Deploy in DMZ or on internal network
- Open single port in firewall for UDP 5008 traffic only to Mobility server
Mobility XE Architecture

- Transport layer proxy - UDP between client and server
  - Only place where can both address transport and application issues created by mobility & wireless

![Architecture Diagram]

- **Mobility Client on a mobile device**
  - Network Applications
  - Winsock 1.1/2.0
  - TDI – Transport Driver Interface
  - NetMotion Mobility Client
  - UDP | TCP
  - IP
  - Ethernet (NDIS)

- **Windows 2000/2003-hosted Mobility Server**
  - Network Applications
  - Proxy Server
  - TDI
  - UDP | TCP
  - IP
  - Ethernet (NDIS)

- **Application server or host system**
  - Network Service
  - UDP | TCP
  - IP
  - Ethernet (NDIS)
SSL & IPSec

- **SSL VPNs – Application Layer VPNs**
  - Designed for Web-based applications
  - Poor wireless performance - slower speed, coverage gaps or network transition require re-authentication
  - Application compatibility issues

- **IPSec VPNs – Network Layer VPNs**
  - Ideal for site-to-site communications
  - User intensive login/logoff process through “breaks” of coverage or network transitions
  - Poor wireless performance - slow
  - No application level control
Mobility XE – Compression on Cellular Data Networks

Download Speed in Kbps

- EDGE (A)
- 1xRTT (S)
- UMTS (A)
- HSDPA (A)
- EvDO Rev A (S)
- BB RevA (V)

Unoptimized, Mobility Compression Off, Mobility Compression On

Laptop copying 10 MB DAT file, AMD 2800+ NMS w/ 2GB RAM running Win2K3
Mobility XE – Web Image Acceleration
Reduction in Bytes Downloaded

File Size in KBytes

<table>
<thead>
<tr>
<th>Setting</th>
<th>Reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>WebAcc OFF</td>
<td>0%</td>
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<tr>
<td>Moderate</td>
<td>86%</td>
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<tr>
<td>Fast</td>
<td>89%</td>
</tr>
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<td>Faster</td>
<td>92%</td>
</tr>
<tr>
<td>Fastest</td>
<td>94%</td>
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</table>

2,341 KB JPG file. Size measured after download.

Web Image Acceleration – Download Speed Setting
Client

- All Windows Clients
  - Installs in minutes – requires reboot.
  - One setting
  - Silent install option available
  - Windows XP and Vista - 5MB of disk space
  - Windows CE and Windows Mobile – 3 MB
Scalability and Reliability

Up to 1,500 Concurrent Connections per Server

- Up to 10 servers in a single pool
- Load Balancing
- Fail-Over

MobilityXE Server

10 Servers per Pool
## Notifications

*Email, SNMP, Syslog*

<table>
<thead>
<tr>
<th>Category</th>
<th>Details</th>
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</thead>
<tbody>
<tr>
<td>Devices and Users</td>
<td>Failed connections, connection attempts by quarantined devices, battery status</td>
</tr>
<tr>
<td>Reporting Database</td>
<td>Database up/down, maintenance alerts</td>
</tr>
<tr>
<td>Reporting Server</td>
<td>Various connection, status and flood-condition alerts</td>
</tr>
<tr>
<td>Mobility Server</td>
<td>CPU/network/memory utilization, up/down status, logging alerts</td>
</tr>
<tr>
<td>Mobility Warehouse</td>
<td>Various connection/status alerts, replication notices</td>
</tr>
<tr>
<td>Licenses</td>
<td>Available licenses above/below threshold</td>
</tr>
</tbody>
</table>
Back Up
- Single UDP Port from Outside to the XE Server Pool.
- Application and Authentication to the Inside from XE Server Pool.
  - XE Server can also be placed on the trusted network
- Easy to deploy and manage through secure browser connection.
MobilityXE Architecture

- MobilityXE is a UDP proxy operating at layers 4 & 5
  - Only place where can both address transport and application issues created by mobility & wireless
SSL & IPSec

SSL VPNs – Application Layer VPNs
- Designed for Web-based applications
- Poor wireless performance - slower speed, coverage gaps or network transition require re-authentication
- Application compatibility issues

IPSec VPNs – Network Layer VPNs
- Ideal for site-to-site communications
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- No application level control
Mobility XE – Compression on Cellular Data Networks

![Graph showing performance comparisons between different cellular data networks with Mobility XE compression on and off.](image)

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Web Image Acceleration – Download Speed Setting
VPN Performance

- IPSec adds 62 bytes of overhead to every packet
- Overhead mounts with multiple applications
- IPSec is not designed for wireless data – tunnel “breaks” on roam or loss of coverage
- IPSec VPNs are very complex and cumbersome to maintain
- SSL suffers from similar session and protocol inefficiency
VPN Performance

- Mobility XE’s Roamable VPN adds only 8-bytes of overhead to each TCP/IP packet.
- Message coalescence further reduces overhead by combining application sessions.
- Combined sessions increase level of security.
- Mobility XE is transparent, easy to use and mobile.
Effects of Real-time Optimizations

No Optimizations

Everyone knows that ants can’t...

Everyone knows that ants can’t...

Everyone knows that ants can’t...

Everyone knows that ants can’t...

With Mobility XE 8.0 Optimizations

Everyone knows that ants can’t...

Everyone knows that ants can’t...

Everyone knows that ants can’t...

Everyone knows that ants can’t...
Latency (round trip): 200ms  Jitter: 4%  Out-of-order packets: 6%
Pilot/Small Deployment - up to 100 devices
Production Deployments – 100’s-1000’s of devices

- Reporting Server
- Reporting Database
- Warehouse
- Internal Firewall
- NMS + Console
- External Firewall
- DMZ
Mobile Challenges

- Lost Data
- Application Crashes
- Re-authenticate
- Re-start
- Slower Network
- Higher Latency
- Slow Applications

Diagram:
- Application
- Server
- Access Point
- Router
- Organization
- Internet
- Wireless Tower
- Coverage Gap

Image:
- Microsoft PowerPoint slide
- Terminal output showing time and network issues
- Error message indicating connection terminated

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