How to Manage and Secure your Digital Workplace

Manjunath Bhat,
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Mobile and Client Computing
What the rest of the World can Learn …

Feel the beat, the language does not matter.

Top 5 countries with smartphone penetration
It can’t get better than this …

Table 2.2: IDI overall rankings and ratings, 2015

<table>
<thead>
<tr>
<th>Economy</th>
<th>Rank 2015</th>
<th>IDI 2015</th>
<th>Rank 2010</th>
<th>IDI 2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Korea (Rep.)</td>
<td>1</td>
<td>8.93</td>
<td>1</td>
<td>8.64</td>
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<tr>
<td>Denmark</td>
<td>2</td>
<td>8.88</td>
<td>4</td>
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<tr>
<td>Iceland</td>
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<td>8.86</td>
<td>3</td>
<td>8.19</td>
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<tr>
<td>United Kingdom</td>
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<td>10</td>
<td>7.62</td>
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<td>Sweden</td>
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<td>Luxembourg</td>
<td>6</td>
<td>8.59</td>
<td>8</td>
<td>7.82</td>
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<tr>
<td>Switzerland</td>
<td>7</td>
<td>8.56</td>
<td>12</td>
<td>7.60</td>
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<td>Netherlands</td>
<td>8</td>
<td>8.53</td>
<td>7</td>
<td>7.82</td>
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<tr>
<td>Hong Kong, China</td>
<td>9</td>
<td>8.52</td>
<td>13</td>
<td>7.41</td>
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<tr>
<td>Norway</td>
<td>10</td>
<td>8.49</td>
<td>5</td>
<td>8.16</td>
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Source: International Telecommunications Union
Key Issues

1. What is the current state of Digital Workplace and how is it evolving?

2. How should organizations address current and future endpoint management challenges?

3. Which endpoint security vendors and technologies should organizations use for their organization?
What is Digital Workplace?

By 2018, 50% of IT support organizations will support assets and services outside their IT service portfolio.
Evidence: Greater Use of Consumer Technology at Work

81% of employees surveyed are using their own apps to improve their working productivity.
Recipe: Seek first to understand; then to be understood.

- Opportunity
  - Use a (feared) Windows O/S upgrade as a catalyst

- Approach
  - Extensive research: Persona Development
  - DW Steering Committee: HR, Facilities, Corp Comm, BU’s and IT
  - E3: Engage, Enable, Empower
  - Consolidate all employee-facing services into a single Digital Workplace service portfolio.

- Results
  - 74% employee satisfaction with IT Services.
  - 17% reduction in computing costs in 24 months.
Recipe: Treat employees as people, even customers.

- **Opportunity**
  - Apply B2C techniques to the internal workforce

- **Approach**
  - Partnered Digital Marketing leader with the IT Leader
  - IT Self-service portal; Guru Bar

- **Results**
  - “The Best thing IT has ever done”

*Gartner Research (G00255203): Boost IT-Business Engagement by Transforming IT Support With Consumer Marketing Techniques*
Recipe: Invite employees to participate in vendor reviews.

- **Opportunity**
  - Reinvent the mobility program to offer employee choice.

- **Approach**
  - Make Employee Appeal a part of Vendor Evaluations.
  - Design Apps for “No Instructions Needed”.
  - **Connected@PNNL**
  - “Silent Pilot” – focus groups of 200 employees

- **Results**
  - One of the highest volunteer BYOD enrollment rates of any US federal agency

*Gartner Research(G00269314): A Simple Recipe for Success in the Digital Workplace*
The CIOs Top Mobile Challenges 2016-2020

**Strategy**
- Become a digital business partner through mobile innovation
- Control shadow mobility in business units
- Create the future digital workplace
- Exploit bimodal IT for agility and effectiveness in mobility
- Scale up — from 10s mobile apps to 100s mobile apps
- Find new funding — or change the funding model
- Gain and retain the necessary mobile staff and skills
- Manage the tension between convenience and security
- Manage mobile device and platform diversity
- Rate of change/immaturity — of devices, platforms, tools, ...

**Tactics**
Top 10 Mobile and Endpoint Strategic Imperatives

- Build a mobile center of excellence. (2016)
- Scale for a large-scale rise in mobile application development. (2017)
- Deploy cloud solutions to the mobile/endpoint portfolio. (2017)
- Plan a migration to one or more cloud office components. (2016)
- Address dynamic OS, application and browser updating. (2016)
- Move endpoint devices to unified endpoint management. (2018)
- Increase self-support and reduce demand for IT endpoint support. (2017)
- Make mobile phones the primary office communication devices. (2016)
- Make Wi-Fi the default networking technology for end users. (2016)
Future IT Organization

Source: Gartner (April 2015)
Cloud Office: Coming Your Way

Examples:
• Polaris Office
• Microsoft Office 365
• Google Apps for Work
• IBM SmartCloud
• Amazon Web Services
• Evernote

Every IT manager must develop a position toward cloud office suites — either a plan to move toward them, or justified reasons why not.
Plan for the Needs of Mobile Cloud Office Workers

- Licensing
- Basic or Advanced EMM?
- Do users need more than cloud office apps?
- Differences in mobile app management across platforms
- Ongoing changes to app management across platforms
- Need for Rights Management
# Mobile Evolution From 2015 to 2025

*Services delivered by any person or thing, anywhere; to any person or thing, anywhere*

<table>
<thead>
<tr>
<th>Mobility 2015</th>
<th>Life 2025</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Contextual apps</strong></td>
<td><strong>Contextual services</strong></td>
</tr>
<tr>
<td><em>App behaviour depends on simple context</em></td>
<td><em>Delivered by any device, person or “thing” that’s nearby</em></td>
</tr>
<tr>
<td><strong>Mobility defined by technology</strong></td>
<td><strong>Mobility defined by people, context &amp; needs</strong></td>
</tr>
<tr>
<td><em>E.g. smartphones, wearables, wireless networks, …</em></td>
<td><em>Whatever you need, wherever you are</em></td>
</tr>
<tr>
<td><strong>Single-device app-centric interactions</strong></td>
<td><strong>Interactions involve many “things” concurrently</strong></td>
</tr>
<tr>
<td><em>Glowing rectangles and touch screens</em></td>
<td><em>Smart TV, coffee machine, smartphone, car, wearable, ……</em></td>
</tr>
<tr>
<td></td>
<td><em>many devices gain user interfaces, e.g. talking coffee machine</em></td>
</tr>
<tr>
<td><strong>Conventional apps</strong></td>
<td><strong>Smart services</strong></td>
</tr>
<tr>
<td><em>Apps are conventional static code</em></td>
<td><em>Machine learning., intelligent VPAs, clever algorithms…..</em></td>
</tr>
<tr>
<td><strong>Reactive services</strong></td>
<td><strong>Proactive business moments</strong></td>
</tr>
<tr>
<td><em>We ask for services</em></td>
<td><em>Stuff just happens, e.g. replenishment, doctor’s appointments, ….</em></td>
</tr>
<tr>
<td><strong>Simple business models</strong></td>
<td><strong>Complex digital business</strong></td>
</tr>
<tr>
<td><em>Buy apps or conduct e-commerce on smaller screens</em></td>
<td><em>Many ways to “pay”, e.g. money, kudos, information. Many participants, new services, multidimensional business models</em></td>
</tr>
<tr>
<td><strong>Few service participants</strong></td>
<td><strong>Complex multi-participant services</strong></td>
</tr>
<tr>
<td><em>E.g. an app plus a cloud service such as Facebook</em></td>
<td><em>Services assembled from many pieces and participants, users may never know what’s behind the scenes</em></td>
</tr>
</tbody>
</table>
Smartphone & Ultramobile Market Share Q4 2015

Smartphone market share Q4 2015
Market Share: Devices, All Countries, 4Q15 Update, ref G00297605

Ultramobile market share Q4 2015
Market Share: Devices, All Countries, 4Q15 Update, ref G00297605
The Three Ages of Mobile

The communications age
*Talk anywhere*

The app age
*Run a program anywhere*

The ubiquitous age
*Do anything, anywhere*
Digital Workplace Enablers

The Personal Cloud Becomes the Center of the User's Personal Workspace, Synchronizing Data and Services Across Multiple Devices
Key Issues

1. What is the current state of Digital Workplace and how is it evolving?

2. How should organizations address current and future management challenges in the Digital Workplace?

3. Which endpoint security vendors and technologies should organizations use for their organization?
EMM is the ‘Glue’ Between Mobile Devices and Enterprise Systems
Enterprise Mobility Management Market Definition

- **App-level Controls**
  - Pre-configured apps (e.g. PIM)
- **Pre-configured apps**
- **Secure content access**
  - File level protections
- **Certificate management, SSO**
- **Ensure Trusted device/user access**
- **Uses Configuration Profile**
- **OS-Level Controls**
- **Uses Configuration Profile**
- **App-level Controls**
  - Pre-configured apps (e.g. PIM)
Use a Spectrum of Solutions to Enforce Compliance

Challenges

- Three major OS platforms
- Can't force OS updates
- Can't stop OS updates
- User may be able to disable MDM agent

Example Solutions

- Android for Work
- Supervised Mode iPhones
- "MAM Only" Workspace
- Close Cooperation of Security and Operations
- “Carrot and Stick” Enforcement
Manage PCs as Mobile Devices for the right use cases

Continuous OS Updates

Drivers

One Management Architecture

Evolution

OSX

Mac OSX

Config Profiles

Mac OS X

Managed Preferences

iOS

Config Profiles

Windows 7

WMI, GPO

Windows 10

OMA-DM

OMA-DM

Windows Phone/RT

Time

Manage PCs as Mobile Devices for the right use cases
EMM/IAM: Complementary and Synergistic Capabilities

Completing the Workspace
- EMM manage mobile app life cycle
- IAM manages SaaS app life cycle
- The workspace will continue to include mobile and SaaS apps

Improving the IAM Function
- Certificate management
- SSO - Wrapping/containerizing as away to consolidate access. Container authenticates and is trusted, therefore all apps in container are trusted.

Using EMM to Make Better Access Decisions
- Device provides data to enable contextual trust
- Location
- State of device
Case Study: Mac@IBM Is Opportunity to Reimagine Support

Key Features of IBM’s Mac Support

- Service desk & Mac engineering coordination
- Specialized service desk
- Self/peer support
- Minimal endpoint agents
- Pull-based software distribution
- Macs managed via EMM
- Guide: “Is Mac right for me” (w/ return policy)

Reported results

- **Satisfaction**: 85% help desk CSAT
- **Staff**: Fewer Mac support people vs. Windows
- **Help Desk**: 5% of Mac users call service desk vs. 40% of Windows users

Apply many of the same practices to Windows to get similar benefits.
Diverse Product Strategies Differentiate EMM Vendors

The figure illustrates the differentiation of EMM vendors based on their product strategies. The vendors are categorized into four main groups: Leaders, Visionaries, Challengers, and Niche Players, based on their completeness of vision and ability to execute.

- **Leaders** include vendors with strong product vision and execution, such as MobileIron, Blackberry/Good, and IBM.
- **Visionaries** like Sophos and Microsoft offer innovative solutions but may lack market share.
- **Challengers** such as SAP and Good Technology have potential for growth.
- **Niche Players** like Landesk and Globo focus on specific market segments.

The diagram also highlights areas such as Unified Endpoint Mgt/Security, VDI/EMM, EMM/IAM, Mobile Specialist, AppDev/EMM, and SAP.

As of June 2015, the analysis was conducted by Gartner, Inc. and its affiliates. All rights reserved.
Three Waves to Unified Endpoint Management

**Wave 1**
Separate Workflows
Separate Products

- Imaging
- Patch Mgmt.
- Group Policy
- SW Dist.
- Client Management
- Enrollment
- Auto-Update
- MDM
- App Stores
- Enterprise Mobility Management

**Wave 2**
Separate Workflows, Same Console

- Imaging
- Patch Mgmt.
- Group Policy
- SW Dist.
- MDM
- App Stores
- Consolidated Endpoint Management

**Wave 3**
Same Workflows, Same Products

- Enrollment
- Auto-Update
- MDM
- App Stores
- Unified Endpoint Management

Enterprise Mobility Management
Key Issues

1. What is the current state of endpoint computing and why is endpoint management changing?

2. How should organizations address current and future endpoint management challenges?

3. Which endpoint security vendors and technologies should organizations use for their organization?
Trends Governing Digital Workplace Security

Promiscuity

Enablement

Convergence

Enterprise Mobility
EMM Requirements:
1. Email
2. File Sharing
3. Usable
4. Secure
5. Easy to Deploy
Mobile Security Strategies for Digital Business

Trust the Device
Example: Mobile Device Management

Trust the App
Example: Mobile Container

Trust the File
Example: CASB

Trust the Network
Example: Trusted Viewer

Trust Nothing
Example: Virtual Mobile Infrastructure

UX, Versatility, Lockdown

Frequency of Use, Number of Users

Trust
How Much Risk Is Enough?

First seat belt **patent**, 1885

First **car** with seat belts, Nash Statesman, 1949 (optional)

First **law** on mandatory seatbelts, Victoria, Australia 1970

Our perception of Risk has to adapt to Digital Business. CIOs have a chance to accelerate this process.
Enterprise Mobility Management Suites Are Hooks for Mobile Security Capabilities

Enterprise Mobility Management

- **DLP**
  - McAfee
  - Trend Micro

- **MDM/EMM**
  - Symantec
  - Mocana
  - Blue Box
  - Mobile Spaces
  - Good
  - MobileIron
  - VMware
  - Citrix

- **Enterprise Authentication**
  - Centrify
  - Okta
  - Ping Identity
  - SecureAuth

- **Secure Web Gateways**
  - Blue Coat
  - WebSense
  - Cisco
  - Zscaler

- **VPN on Demand**
  - Check Point
  - Cisco
  - Juniper
  - Mocana

- **Vulnerability Management**
  - Qualys
  - Tenable
  - Rapid7
  - Zimperium

Partial Vendor Lists — Order Is Arbitrary — Does Not Represent a Gartner Rating
Security Principles When Mobile Meets Digital Business

Cloud-Based Resources
- Assessments
- SLAs
- User agreements
- Encryption tools

Smart Devices/Sensors
- Segmentation
- Adaptive authentication
- Anomaly detection
- Self-defending apps
- User agreements

Digital Workplace
- Policies
- Isolation
- Data-centric
- Containment
- Self-defending apps

Dumb Devices/Sensors + Exceptions
- Lockdown
- Management

Enterprise
- Threat Intelligence
- Behavior Analytics
Mobile Threat Defense

- App or agent running on device with some cloud-based intelligence:
  - Behavioral anomaly detection
  - Network-based attack detection
  - App sandboxing

Sample vendors

Current Challenges for Mobile:
Key Management, Privacy, Battery Drain, Traffic Redirection
People centric Security

Monitor

Rights Responsibilities

Principles

Educate
Create a **Minimum Security Baseline**

<table>
<thead>
<tr>
<th><strong>Device</strong></th>
</tr>
</thead>
</table>
| • Force Encryption  
| • Define Minimum OS Version  
| • Jail break and Root Detection. |

<table>
<thead>
<tr>
<th><strong>Passcode</strong></th>
</tr>
</thead>
</table>
| • Minimum Password Length and Complexity  
| • Number of Sign-in failures before a device is wiped.  
| • Lock Devices if they are inactive for X minutes.  
| • Setup Passwords to expire in X days |

<table>
<thead>
<tr>
<th><strong>Application</strong></th>
</tr>
</thead>
</table>
| • Create an app filtering strategy – blacklist/whitelist  
| • Choose an appropriate containerization approach.  
| • Per-App VPN  
| • Remote Wipe  
| • Conditional Access |
EMM + Mobile Security = Secure Mobility

Environments where built-in security within EMM will suffice

MDM – Policy Management
Remote Wipe, Password Policies, Enforce device encryption, Device Restrictions

EMM – Built in security
Selective Wipe, Support for Managed apps, Jailbreak Detection, Managed Open-in Containerization, Support dedicated work profile

EMM with additional security
Mobile Identity, Single Sign-On with Kerberos, Biometric authentication, Secure content access, App hardening, Secure PIM products, Third-party app wrappers, Third party email gateway, VPN Gateways (Mocana, PA)

Secure Mobility
Geo-fencing, Time-fencing, Contextual Awareness, Conditional/Adaptive access, Integration with Mobile App, Reputation scanning, Integration with Mobile Threat Defense, Integration with Access Control products to enforce security policies for endpoint devices, Integration with Rights Management (EDRM) for Documents and Email, Integration with Next Gen firewalls (NGFW)

Leverage the inherent synergy between EMM and Mobile Security tools

SMBs, Retail, Education, Hospitality, Logistics, Field Services, Homeland Security, Finance, Healthcare, Public sector, Oil and gas, companies where IP and user privacy is critical.

Gartner
Mobile Security: A Taxonomic Classification

- Mobile Malware Protection
- Mobile Threat Defense
- Endpoint Protection platforms

- Mobile app reputation
- Mobile app Hardening
- Mobile app containers

- Data Loss Prevention
- Virtual Mobile Infrastructure
- Rights Management Services
How to Manage and Secure in the Post-app Era

- New platforms
  - Social networks & new technologies become platforms & apps move to the cloud.
- New experiences & tools
  - VPAs take over app tasks and interactions
  - Orchestration of many devices
- New devices
  - Wearables
  - Appliances in the smart home & office, cars
- Cases where apps don't work
  - Problems of scale for the IoT, physical web
  - One-off interactions
- Vanishing apps
  - Apps that disappear behind the scenes

2016 - 2020
**Recommendations**

**Monday Morning:**
✓ Understand your vendor's future plans toward Wave 2 endpoint management support and ensure that MDM and EMM purchases are viewed as tactical with lifetimes limited to twenty four months.

**Next 90 days:**
✓ Mobile tasks involve user participation; educate users on issues related to enrollment, compliance, app delivery and troubleshooting.
✓ Evaluate new strategies and approaches to enhance current management capabilities.
✓ Create a minimum security baseline by identifying your organization’s risk exposure.

**Next 12 months:**
✓ Organize your mobile operations team to support converging mobile and cloud services.
Recommended Gartner Research

- **Magic Quadrant for Enterprise Mobility Management Suites**
  Terrence Cosgrove, Rob Smith, Chris Silva and Others (G00265477)

- **Critical Capabilities for Enterprise Mobility Management Suites**
  Terrence Cosgrove, Rob Smith, Chris Silva and Others (G00265601)

- **Don't Abuse Business Users for Peer-to-Peer IT Support**
  Chris Matchett, Adam Preset, Manjunath Bhat (G00281218)

- **EMM Providers face a Unique Market Opportunity in China**
  Manjunath Bhat, Tracy Tsai (G00301333)

- **Prepare for the Security Implications of the Digital Workplace**
  Tom Scholtz, Matthew W. Cain, Andrew Walls (G00263954)