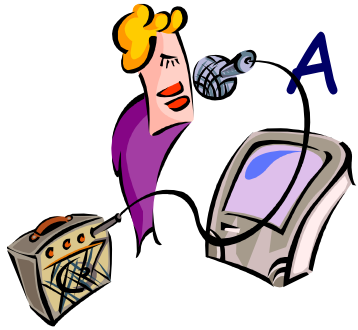


Karaoke and the Art of Wireless Deployment and Expansion

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A Brief History of Karaoke

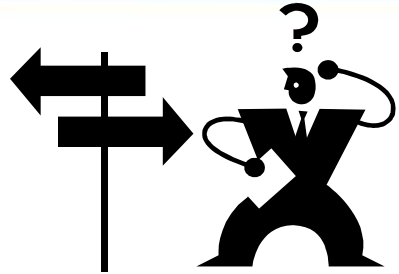
- **Started in Kobe, Japan, in the late 1970s. The word "karaoke" comes from the joining of two Japanese words: 'Kara' (empty) and 'Okie' (short for orchestra).**
- **Involves the creation of a new type of entertainment that involves the separation of the two basic elements of music -- vocals and the actual music track. In karaoke, the vocals are provided by a live person -- not usually a professional -- who sings words that are displayed on a screen or in a lyric book.**
- **Concept born from desperation and innovation.**

How Does this Relate to Wireless?



- **Companies no longer locked into single-company solutions, or solutions that offer a 'Swiss Army Knife' package**
- **Most IT and network managers are now comfortable with 'layered' solutions, or those that involve different but integrated modules (security, device management, content channeling, etc.)**
- **Increased opportunity for systems integrators and solutions providers, as well as for smaller and more niche-focused companies**





How Does this Impact the Enterprise End-user Decision Process?

- **IT executives look for solutions that are not necessarily modular and expandable, but can perform specific tasks very well and can be easily integrated with existing or future products**
- **The 'karaoke approach' has less trauma on approved corporate buy lists**
- **Selection and deployment tactics are based on compatibility and integration issues, and not necessarily on brand**

The Enterprise Perspective

- **More emphasis on the 'who, what and where' of RF management and provisioning**
- **What is happening within an RF space (a near real-time view)**
- **Seamless, reliable and unobtrusive security**
- **Redundancy and 'fail-safe' safeguards**
- **Quick and foolproof maintenance and upgrades (identifying bad APs and optimally positioning system enhancements and expansions)**
- **More emphasis on security and convenience factor than on wireless access to mission-critical data (ROI on the back-burner)**

What the Enterprise User is Looking for in a Wireless Solution

- **Well-defined and clear-cut policy management definitions and procedures, which serve as a framework for the entire wireless system, its use and security**
- **The ability to confine wireless access to a specific space within a building or wireless environment**
- **A real-time view of all wireless activities within a defined space, ability to track and monitor wireless users and create an audit of device usage**
- **The ability to develop a history of device usage by each authorized individual**

What the Enterprise User is Looking for...

- **Secure guest/visitor access**
- **Easy and transparent log-in**
- **Simple and 'uncluttered' management capabilities**
- **Minimum obligations of client hardware/software**
- **Efficient use of bandwidth (dealing with finicky networks)**
- **Audit capabilities and accountability**
- **More emphasis on content access versus wireless access**
- **Unobtrusive security techniques**

Security is the Most Critical Concern, But...

- **Increasing demand for the ability to easily map wireless architectures for optimum performance**
- **Identify and suggest corrective alternatives for misconfigured or poorly situated wireless APs**
- **Install compatible solutions to create a seamless environment**
- **Easily expand and enhance wireless systems in real time, with the end result being an almost 'intuitive nature' to wireless architecture**
- **Self deployment, self healing, etc.**

The Rising Demand for On-the-fly *Tweaking*

- **The ability to identify and suggest corrective alternatives for misconfigured or poorly situated wireless APs, since the optimum placement of this systems is necessary to maintain reliability and performance.**

The Search for the *Self-reliant* Wireless LAN

- **Systems that automatically tune power level and RF performance**
- **Layered or integrated systems that track APs and signals in relation to client devices**
- **Can recognize and in some cases isolate rogue signals/devices**
- **Real-time troubleshooting, monitoring and resource planning**

Real-time Resource Planning is Key

- **Majority of IT/network departments do not do extensive pre-install deployment planning**
- **Strategy is that since technology is cheap, then throwing a lot of it in a network can eliminate problems**
- **The reality is that too much unchecked and uncontrolled technology can present more problems**

Case History: Large-scale Manufacturer

- **Task was to develop and deploy multiple wireless networks within up to 18 different buildings.**
- **Non-roaming capability outside or between buildings (each system operates independently)**
- **Non-mission critical applications – system installed more for convenience and guest services**
- **Multi-vendor network, primarily based on Cisco equipment**

Case History: Large-scale Manufacturer

- **Company took a 'karaoke approach' (tackling wireless, deployment, security and authorization issues separately, with the idea of eventual harmony), but initial deployment tactics a bit 'out of tune'**
- **Chess board tactics with wireless ceiling tiles**
- **Security may be a problem, since everything based on wired VPNs with no safeguards on the client side**
- **Limited user education re: potential risks of wireless (policy management issues, ad hoc access, rising use of wireless at home and away from office)**

Case History: Healthcare Provider

Unique industry segment because:

- **Basic security safeguards and data encryption (WEP, WPA, etc.) are not enough due to demands of privacy standards defined by HIPPA (U.S.) and other government mandated rules and restrictions**
- **Third-party security solutions used, but only if they can be smoothly integrated into existing or planned systems, and can accommodate system-wide upgrades, etc.**
- **Involves a base of users who are intelligent and technically capable, but typically have the least tolerance for wireless glitches and may be the most demanding in terms of applications and usage**

Case History: Healthcare Provider

System should provide:

- **Bedside charting, monitoring and order entry**
- **VoIP for doctor and nurse communications**
- **Ability to use wireless carts and computer stations throughout hospital**
- **Management and optimization from a single point, visibility and control over entire RF domain, remote diagnostics**
- **Most important: Reduce troubleshooting costs and downtime**

The 'Grid Approach' to Wireless Nirvana

- **Use of multiple cards within the same router/switch**
- **Provides fault tolerance**
- **Centralized WLAN**
- **Modular hardware/software upgrades**
- **Multi-point location triangulation that enables real-time location tracking**
- **Self-healing and load-balancing capabilities**
- **Deployment of thin-client APs results in lower costs, easier management**



Launching a *Karaoke-inspired* Wireless Project

First, the 'music'...in this case the basic underlying technology:

- **Initial planning**
- **Technology assessment**
- **Technology deployment**
- **System optimization**
- **Reliability safeguards**

Initial Planning



- **Develop a clear and well-organized wireless policy and list of procedures *before* plugging in the first router and AP**
- **Map out the proposed wireless environment, using tools to identify poor signal areas and dead zones**
- **Establish an on-site testing facility, or at least procedures for testing proposed and new systems and equipment**
- **Develop initial and continuing education programs and resources (perhaps launching a wireless systems Web site)**
- **Establish easily understood rules of operation for guest vs. visitor wireless privileges**

Technology Assessment



- **Do your homework in terms of initial technology assessment, and then work with a systems integrator familiar with technology and how it is specifically applied to your business segment**
- **Try to avoid being an 'early adopter' – especially when dealing with a smaller vendor or solutions provider. Okay for small beta tests, but could create a lot of unnecessary work for larger installations**
- **Evaluate systems that are flexible and can grow, but also meet your more immediate needs (Beware the a,b,g and i's of wireless connectivity)**
- **Learn to recognize the differences between basic wireless gateways and more capable and flexible equipment**

Technology Assessment

Not all wireless gateways and systems are alike.

Type 1: Products that offer some level of wireless signal tracking and can detect wireless traffic within a network environment. These systems can be used to catalog user access and restrict access to a specific AP or set of APs by identifying the MAC address of the wireless client device.

Technology Assessment

Not all wireless gateways and systems are alike.

Type 1: Products that offer some level of wireless signal tracking and can detect wireless traffic within a network environment. These systems can be used to catalog user access and restrict access to a specific AP or set of APs by identifying and MAC address of the wireless client device.

Type 2: Systems that offer basic signal tracking and identification of wireless access cards and embedded systems, and add capabilities that allow for smooth network roaming and bandwidth management. They have the ability to identify rogue access points and unauthorized intrusions, and offer a variety of tools designed for security policy enforcement.

Technology Assessment

Type 3: Wireless systems that offer all of the signal tracking and identification capabilities of Type 1 and Type 2 devices, but integrate those features with strong security and management abilities that permit content and network provisioning, location tracking and monitoring, actionable alerts, real-time logging and auditing.

Also have the ability to identify and isolate unauthorized access and accidental associations initiated from outside the wireless perimeter.

Technology Deployment



- **Gradual installation and usage, especially in multi-building or campus-wide applications**
- **Liberal use of tracking and RF measurement tools, especially in older buildings or areas that involve 'unique' building characteristics**
- **Have a 'fail-safe' plan in case of wireless system problems – if all else fails, 'plug it in'**
- **Use multiple technologies. For example, high-gain directional antennas to overcome areas of poor reception and transmission**
- **Don't be afraid to develop your own rules and documentation when it comes to vendor equipment – especially if you are an early adopter**

System Optimization and Reliability Safeguards

- **Adopt or develop a centralized way of monitoring what is happening within an RF space – preferably in near-real-time**
- **Investigate solutions that offer the ability to ‘fine tune’ wireless signals and coverage (not necessarily related to security issues)**
- **Establish reliability standards and requirements, based on equipment limitations and your own requirements**
- **Establish a clear and robust plan to retire outdated and obsolete equipment – A wireless system is only as strong as its weakest link**



Launching a *Karaoke-inspired* Wireless Project

Now, the 'lyrics' ...or the individual and unique requirements of each company:

- **Security policies (levels of authorization, access and control)**
- **Access and interaction with central information resource**
- **Types of content to be channeled through the wireless net**
- **Operational policies vs. creativity and collaboration**
- **Location-based services (adding context and purpose to wireless access to benefit ROI)**

Measuring the ROI of Wireless Systems

- **Difficult since many wireless systems are installed as a user *convenience* and may not directly interact with the primary mission-critical wired networks**
- **Additions and enhancements to wireless systems may be avoided, or at least implemented with extreme caution**
- **Security restrictions may limit the benefits of wireless to reductions in 'sneaker-net' activities**

