Radio Management Deployment Guide

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Summary

This document serves as a guide towards planning Radio Management deployments. For more information on Radio Management, please refer to the readme.doc or the help for CPS.

Deployment Scenarios

Radio Management is a distributed software application suite that can be deployed in a wide range of scenarios depending on the customer need. The simplest case is All-In-One deployment where all software components are installed on one PC. This suits customers with a very small fleet (less than 100 radios) of co-located radios. Windows 7 or higher is recommended to host an All-In-One deployment.

As the number of radios increases and the fleet topology becomes geographically more scattered, the benefits of more advanced deployment options become evident. Figure below shows a fully distributed deployment.
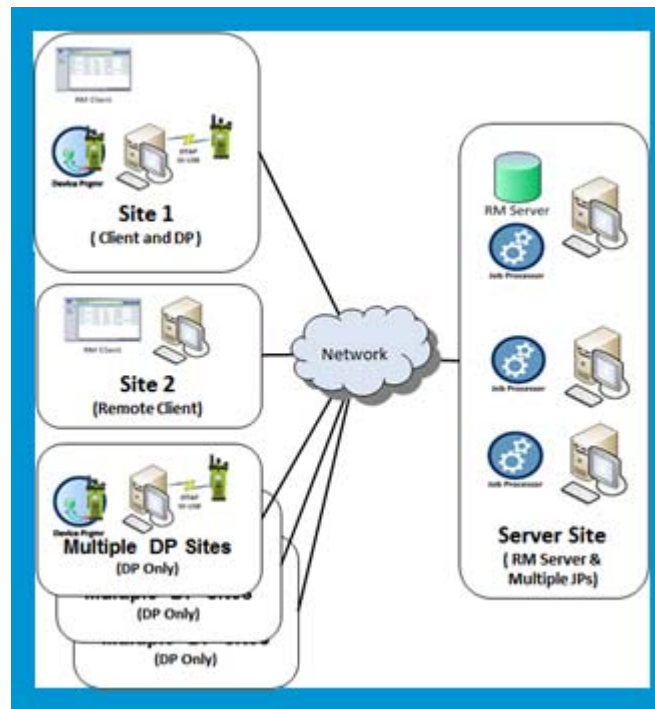

Figure 1: RM Distributed Deployment

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Factors affecting Deployment choice

There are three main factors that affect how Radio Management is deployed.

Fleet Size

More radios will require more processing power from the server. This is also a factor in deciding how many Job Processors are necessary. For simplicity, this document uses four broad categories of sizes as illustrated in the table below.

Small	Under 1000 radios
Medium	1000-5000 radios
Large	5000-20,000 radios
Extra Large	Above 20,000 radios

Maximum allowed processing time

Jobs are typically prepared and scheduled in advance and executed later when radios are detected by Device Programmers. Processing time refers to the time it takes for a scheduled job to be processed by the available Job Processors. Maximum processing time is required for a write job that includes firmware upgrade, targeting the entire fleet.
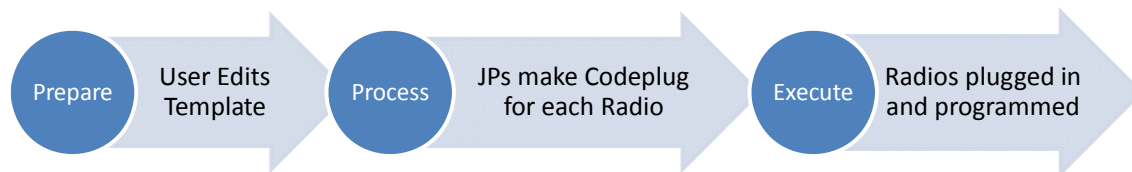
Prepare → User Edits Template → Process → JPs make Codeplug for each Radio → Execute → Radios plugged in and programmed

Figure 2: Process Flow of a Write Job

This factor controls how many Job Processors are needed.

Fleet Topology

Having Device Programmers in locations that the Radio users visit every day will both improve the overall job execution speed and reduce potential disruption to the Radio user's activities.

The system administrator will need to define the number of Device Programmers and their placement that best fits the need.

RM Server Hardware Recommendation

The hardware choice for RM Server is driven primarily by the size of the fleet. The chart below can help make a recommendation. The actual brand images and models are for illustration only and can be replaced with those with comparable specs.

Windows 7 or newer OS is required to host RM server.

Newer hardware is introduced into the market frequently. The processor family recommendations are based on the data available in Q1 2013. As newer processor families are introduced by Intel and AMD, the reader is encouraged to refer to major server manufacturers' (Dell, HP, etc.) web sites for current server hardware.

Small

- Xeon® E5-2400
- 8GB RAM
- 7.2K RPM SATA 3Gbps HDD*
- Gigabit Ethernet

Medium

- Xeon® E5-2600
- 16GB RAM
- 10K RPM SAS 6Gbps HDD
- Gigabit Ethernet

Large

- Xeon® E5-4600
- 16GB RAM
- 15K RPM SAS 6Gbps HDD
- Gigabit Ethernet

Figure 3: Suggested Minimum Server Specs

* SAS (Serial Access SCSI) Hard Disks provide better performance and reliability compared to SATA drives and are hence recommended. Please refer to the appendix for a comparison.

Extra-large fleets may require additional considerations and it is recommended to contact Motorola Solutions for assistance regarding deployment.

Dedicated Job Processors

As the fleet size grows, more job processors will need to be added to maintain the performance. This is more important than upgrading the server itself.

Job Processors do not require server grade hardware. Please refer to the document *Job Processor Deployment Guide* for details on this.

Device Programmers (DPs)

Device Programmers are designed to be light weight and hence can be deployed on lower spec hardware. An x86 or x64 PC with 2GB RAM running Windows 7 or higher is recommended. Powered USB hub with sufficient number of ports must be attached to do gang programming.

The number of DPs is driven by the fleet size and topology.

DPs can either use USB or Over The Air, not both. There can only be one Over The Air DP per system. Physical location of an Over The Air DP is determined by ease of access to the system's IP network.

Even in very small fleet sizes multiple Device Programmers may be used to provide convenient access.

Appendix

Comparison between SAS and SATA drives:

HDD Type		SAS	SATA
Test Duration		24 hours/day - 7days/week	8 hours/day - 5days/week
Performance	Latency and Seek	5.7 msec @ 15K rpm	13 msec @ 7200rpm (or smaller)
	Command Queuing and Reordering	Full	Limited
	Rotational Vibration Tolerance	Up to 21 rads/sec/sec	Up to 5 to 12 rads/sec/sec
	Typical I/Os per sec/drive	319	77
	Duplex Operation	Full	Half
Reliability	MTBF	1.2M hours at 45 degrees C	700K hours at 25 degrees C
	Internal Data Integrity Checks	End to End	Limited, none in memory buffer
	Maximum Operating Temperature	~60 degrees C	~40 degrees C
	Warranty	~5 years	~ to 3 years

Figure 4: SAS vs. SATA (http://www.intel.com/support/motherboards/server/sb/CS-031831.htm)

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