

Preventive Maintenance Statement of Work

Version 5.0

January 2016

Preventive Maintenance Statement of Work

The terms and conditions of this Statement of Work (SOW) are an integral part of Motorola's Service Agreement or other applicable agreement to which it is attached and made a part thereof by this reference.

System Preventative Maintenance will provide an operational test and alignment, on the customer's infrastructure equipment (infrastructure or fixed network equipment only) to ensure the Infrastructure meets specifications, as set forth in the applicable attached Exhibit(s), all of which are hereby incorporated by this reference.

1.1 Scope

System Preventive Maintenance will be performed during standard business hours (unless otherwise agreed to in writing). If the system or Customer requirements dictate this service must occur outside of standard business hours, Motorola will provide an additional quotation. Customer is responsible for any charges associated with unusual access requirements or expenses.

1.2 Geographic Availability

Preventive Maintenance is available to any customer regardless of their geographic location.

1.3 Inclusions

Preventive Maintenance service will be delivered on Motorola sold infrastructure including integrated 3rd party products per the level of service as defined in [Table 1: PM Tasks Performed per Standard or Enhanced Levels](#).

1.4 Limitations and Exclusions

Unless specifically called out in Table 1, the following activities are outside the scope of the Preventive Maintenance service, but are optional services that are available to Preventive Maintenance customers at an additional cost:

- 1.4.1 Emergency on-site visits required to resolve technical issues.
- 1.4.2 Third party support for equipment not sold by Motorola as part of the original system.
- 1.4.3 System installations, upgrades, and expansions.
- 1.4.4 Customer training.
- 1.4.5 Hardware repair and/or exchange.
- 1.4.6 Network security services.
- 1.4.7 Network transport.
- 1.4.8 Information Assurance.
- 1.4.9 Motorola services not included in this statement of work.
- 1.4.10 Any maintenance required as a result of a virus or unwanted intrusion is excluded if the system is not protected against these security threats by Motorola's Pre-tested Security Update Service when applicable.

1.5 Motorola has the following responsibilities:

- 1.6 Notify the customer of any possible system downtime needed to perform this service.
 - 1.6.1 Advise customer of any issue that requires immediate attention.
 - 1.6.2 Maintain communication with the customer as needed until completion (“resolution” implies a problem is being fixed) of the Preventive Maintenance.
 - 1.6.3 Determine, in its sole discretion, when a case requires more than the Preventive Maintenance services described in this SOW and notify customer of an alternative course of action.
 - 1.6.4 Provide customer with a report documenting system performance against expected parameters along with recommended actions. Time allotment TBD.
 - 1.6.5 Provide trained and qualified personnel with proper security clearance required to complete Preventive Maintenance service.

1.7 The Customer has the following responsibilities:

- 1.8 Provide preferred schedule for Preventative Maintenance to Motorola.
- 1.9 Authorize and acknowledge any scheduled system downtime.
- 1.10 Maintain periodic backup of databases, software applications, and firmware.
- 1.11 Establish and maintain a suitable environment (heat, light, and power) for the equipment location and provide Motorola full, free, and safe access to the equipment so that Motorola may provide services. All sites shall be accessible by standard service vehicles.
 - 1.11.1 Submit changes in any information supplied in the Customer Support Plan (CSP) to the Customer Support Manager (CSM).
 - 1.11.2 Provide site escorts in a timely manner if required.
 - 1.11.3 Provide Motorola with requirements necessary for access to secure facilities.

Table 1: PM Tasks Performed per Standard or Enhanced Levels

	Standard	Enhanced
Preventive Maintenance Checks		
<u>RF Site</u>		
Visual Inspection (cabling, equipment, fans, indicators) - Inspect stations/components for normal operation	x	x
Visual inspection (panel condition, cabling and batteries) - Verify, check panel housing, cracks and weathering, physical connections, corrosion, dirt/dust, etc.	x	x
Clean fans and equipment - Use antistatic vacuum to clean cooling pathways	x	x
Site frequency standard check- Check lights and indicators for A/B receivers	x	x
Regulatory Compliance (license, ERP, frequency, deviation) - Check station for regulatory compliance. Update station logs	x	x
Effective Receiver Sensitivity (ERS) - Check overall receiver sensitivity and operation	x	x
Line level validation (analog only) - Check inbound and outbound audio levels	x	x
Voice Call Check - Voice test each channel radio to radio and radio to console	x	x
Control channel redundancy (trunking) - Roll control channel, test, and roll back.	x	x

	Standard	Enhanced
Preventive Maintenance Checks		
<u>Master Site & Prime Site</u>		
SERVERS		
Visual Inspection -- Verify RED LED's and/or alarm indications/R56	x	x
Capture Diags -- Perform recommended diagnostic tests based on server type. Capture available diagnostic logs.	x	x
Server Check Disks -- Perform Checkdisk on server hard drives.	x	x
NM Client Applications -- Review UEM events and transport medium types, (Microwave/LeasedLine/Telco, etc). Event Log review for persistent types. Verify all NM Client applications are operating correctly.	x	x
Verify System SW CD's -- Perform audit of software media on site. Versions, KC numbers, types, etc.	x	x
Verify System SW Installed -- Verify software versions installed on system. Document any changes.	x	x
Complete Backup -- Verify Backups have been done or scheduled. SZ Database (BAR), Centracom CDM/ADM Database, etc.	x	x
Verify Redundant Switches -- Test redundancy in CWR devices. Core router switchover. (Coordinate with customer.)	x	x
Verify Redundant ZC's -- Perform Zone Controller switchover. ZC1 to ZC2 and back again. (Coordinate with customer.)	x	x
ROUTERS		
Visual Inspection -- Verify RED LED's and/or alarm indications/R56	x	x
SWITCHES		
Visual Inspection -- Verify RED LED's and/or alarm indications/R56	x	x
Capture Diags -- Perform recommended diagnostic tests based on switch type. Capture available diagnostic logs.	x	x
Verify Redundant Switches -- Test redundancy in CWR devices. Core router switchover. (Coordinate with customer.)	x	x
DOMAIN CONTROLLERS		
Visual Inspection -- Verify RED LED's and/or alarm indications/R56	x	x
Capture Diags -- Perform recommended diagnostic tests based on server type. Capture available diagnostic logs.	x	x
Server CPU Health -- i.e. Memory, HDD, CPU, Disk space/utilization.	x	x
Verify System SW CD's -- Perform audit of software media on site. Versions, KC numbers, types, etc.	x	x
Verify System SW Installed -- Verify software versions installed on system. Document any changes.	x	x
FIREWALLS		
Visual Inspection -- Verify RED LED's and/or alarm indications/R56	x	x

Capture Diags -- Perform recommended diagnostic tests based on server type. Capture available diagnostic logs.	x	x
LOGGING EQUIPMENT		
Visual Inspection -- Verify RED LED's and/or alarm indications/R56	x	x
Capture Diags -- Perform recommended diagnostic tests based on server type. Capture available diagnostic logs.	x	x
Server CPU Health -- i.e. Memory, HDD, CPU, Disk space/utilization.	x	x
Antivirus -- Verify latest AntiVirus Definitions are being used. Record version.	x	x
MISCELLANEOUS EQUIPMENT		
Visual Inspection -- Verify RED LED's and/or alarm indications/R56	x	x
Capture Diags -- Perform recommended diagnostic tests based on server type. Capture available diagnostic logs.	x	x
Server CPU Health -- i.e. Memory, HDD, CPU, Disk space/utilization.	x	x
Antivirus -- Verify latest AntiVirus Definitions are being used. Record version.	x	x

	Standard	Enhanced
Preventive Maintenance Checks		
<u>Dispatch Site</u>		
GENERAL		
Inspect all Cables -- Inspect all cables/connections to external interfaces are secure	x	x
Mouse and Keyboard -- Verify operation of mouse and keyboard	x	x
Configuration File -- Verify each operator position has access to required configuration files	x	x
Console Op Time -- Verify console op time is consistent across all ops	x	x
Screensaver -- Verify screensaver set as customer prefers	x	x
Screen Performance -- Verify Screen operational /performance	x	x
Touchscreen -- Verify Touchscreen operation (if applicable)	x	x
Cabling/Lights/Fans -- Visual inspection of all equipment - cabling/ lights/ fans	x	x
Filters/Fans/Dust -- Clean any filters/ fans/ dust- all equipment	x	x
Monitor and Hard Drive -- Confirm monitor and hard drive do not "sleep"	x	x
DVD/CD -- Verify / clean DVD or CD drive	x	x
Time Synchronization -- Verify console time is synchronized with NTP server		x
Anti-Virus -- Verify Anti-Virus is enabled and that definition files are up to date (within two weeks of current date)		x
HEADSET UNPLUGGED TESTING		
Speakers -- Test all speakers - audio quality, volume, static, drop-outs, excess hiss when turned up.	x	x
Channel Audio in Speaker -- Verify Selected channel audio in Select speaker only.	x	x
Footswitch Pedals -- Verify both footswitch pedals operational	x	x
Radio On-Air Light -- Verify radio on air light comes on with TX (if applicable)	x	x
HEADSET PLUGGED IN TESTING		
Radio TX and RX -- Verify radio TX/RX from both headset jacks. Verify levels OK. Check volume controls for noise/static or drop-outs.	x	x
Speaker Mute -- Verify Select speaker muted.	x	x

Telephone Operation -- Verify telephone operational through both headset jacks. Check volume controls for noise/static or drop-outs.	x	x
Audio Switches -- Verify Select audio switches to speaker when phone off-hook. (if interfaced to phones)	x	x
Radio Takeover in Headset -- Verify radio-takeover in headset mic when phone off-hook (mic switches to radio during PTT and mutes to phone).	x	x
OTHER TESTS		
Phone Status Light -- Verify phone status light comes on when phone off-hook. (If applicable)	x	x
Desk Microphone Operation -- Confirm desk mic operation (If applicable)	x	x
Radio IRR Operation -- Verify radio IRR operational. (If applicable)	x	x
Telephone IRR Operation -- Verify telephone [if on Radio computer] IRR operational. (If applicable)	x	x
Recording -- Verify Operator position being recorded on long term logging recorder.(If applicable)	x	x
IRR Setup Parameters -- Check IRR set-up parameters, and also audio card set-up and level adjustments		x
Paging Controls -- Confirm all paging controls are functional (Including third party encoders if under maintenance)		x
COMPUTER PERFORMANCE TESTING		
Computer Reboot -- Reboot Op position computer	x	x
Computer Operational -- Confirm client computer is fully operational. (If applicable)	x	x
Hard Drive Fragmentation -- Check status of hard drive fragmentation-perform if needed		x
Event Logs -- Pull Event logs and review for major errors		x
Backup -- Create backup of drive for offsite storage		x
Memory Usage -- Check memory usage		x
Application Logs and Alerts -- Review built in Application logs and alerts		x
AUDIO TESTING		
Audio Levels and Quality -- Confirm all Conventional Resources are functional with adequate audio levels and quality	x	x
Secure Mode -- Confirm any secure talkgroups are operational in secure mode	x	x
Trunked Resources -- Confirm all trunked resources on screen are functioning by placing a call in both directions (at the customer discretion) and at a single op position		x
EQUIPMENT ROOM TESTS		

Recording- AIS Test: Test all tracks on IP Logger (with customer assistance)	x	x
Recording: Test Op position logging on analog recorder (with cust assistance)	x	x
System Alarms: Review Alarm system on all equipment for errors	x	x
SDM AUX I/O Server: Confirm all AUX I/O's functional on one operator position		x
Backup Resources: Confirm all backup radios meet RF specs and combiner/antenna system fully functional		x
Software - Versions: Review Software versions on all equipment if current		x
Transport Latency: Confirm transport latency meets performance specifications (Ping)		x
Transport Performance: Confirm transport performance by using built in performance tools in equipment		x
System Redundancy: Switch to redundant equipment to confirm operation		x
FACILITIES		
Lighting	x	x
Cleanliness	x	x
Site and equipment access	x	x
HVAC	x	x
Hazards	x	x
Grounding	x	x
Cabling	x	x

	Standard	Enhanced
Preventive Maintenance Checks		
<u>MOSCAD</u>		
SERVER		
Visual Inspection -- Verify RED LED's and/or alarm indications/R56	x	x
Check Alarm / Event History -- Review MOSCAD alarm and events to find if there are chronic issues.	x	x
Windows Event Logs -- Review Windows Event Logs. Save and clear if full.	x	x
Antivirus -- Review for the latest AntiVirus Definition.	x	x
Password Verification -- Site Devices to verify Passwords. Document changes if any found.	x	x
Verify System SW CD's -- Perform audit of software media on site. Versions, KC numbers, types, etc.	x	x
Verify System SW Installed -- Verify software versions installed on system. Document any changes.	x	x
Server CPU Health -- i.e. Memory, HDD, CPU, Disk space/Utilization.		x
Verify Patches -- Verify security patches monthly/quarterly (Motorola and 3rd Party). Document any changes.		x
Complete Backup -- Verify Backups have been done or scheduled. SZ Database (BAR), Centracom CDM/ADM Database, etc.		x
CLIENTS		
Visual Inspection -- Verify RED LED's and/or alarm indications/R56	x	x
Check Alarm / Event History -- Review MOSCAD alarm and events to find if there are chronic issues.	x	x
Windows Event Logs -- Review Windows Event Logs. Save and clear if full.	x	x
Password Verification -- Site Devices to verify Passwords. Document changes if any found.	x	x
Verify System SW CD's -- Perform audit of software media on site. Versions, KC numbers, types, etc.	x	x
Verify System SW Installed -- Verify software versions installed on system. Document any changes.	x	x
Verify Patches -- Verify security patches monthly/quarterly (Motorola and 3rd Party). Document any changes. May be covered under an SOC/NOC/NMO service contract.		x
RTU's		
Visual Inspection -- Verify RED LED's and/or alarm indications/R56	x	x
Verify Connectivity --	x	x
Password Verification -- Site Devices to verify Passwords. Document changes if any found.		x

Check Alarm / Event History -- Review MOSCAD alarm and events to find if there are chronic issues.		x
Verify System SW CD's -- Perform audit of software media on site. Versions, KC numbers, types, etc.		x
Verify System SW Installed -- Verify software versions installed on system. Document any changes.		x

	Standard	Enhanced
Preventive Maintenance Checks		
FACILITIES		
VISUAL INSPECTION - EXTERIOR		
ASR Sign -- Verify that the ASR Sign is posted.	x	x
Warning Sign - Tower -- Verify Warning Sign is posted on the tower.	x	x
Warning Sign - Gate -- Verify that a warning sign is posted at the compound gate entrance.	x	x
10 Rule Sign -- Verify that a 10 Rules sign is posted on the inside of the shelter door.	x	x
Tower Lights -- Verify operation of tower lights day/night mode.	x	x
Outdoor Lighting -- Verify operation of outdoor lighting/photocell.	x	x
Transmission Lines -- Verify that transmission lines are attached to the tower.	x	x
Exterior of Building -- Check exterior of building for damage/disrepair.	x	x
Fences / Gates -- Check Fences/Gates for damage/disrepair.	x	x
Landscape / Access Road -- Check landscape/access road for accessibility.	x	x
VISUAL INSPECTION - INTERIOR		
Electrical Surge Protectors -- Check electrical surge protectors for alarms.	x	x
Emergency Lighting -- Verify Emergency Lighting operation.	x	x
Indoor Lighting -- Verify Indoor lighting.	x	x
Visual Inspection (Cabling, Equipment, Fans, Indicators) -- Inspect stations/components for normal operation.	x	x
Site frequency standard check -- Check lights and indicators for A/B receivers.	x	x
Regulatory Compliance (License, ERP, Frequency, Deviation) -- Check station for regulatory compliance. Update station logs.	x	x
UPS		
Visual inspection (condition, cabling) -- Verify corrosion, physical connections, dirt/dust, etc.	x	x
Verify rollover and rollback -- ***Caution if rollover is "make before break" or "break before make". May cause outage or impact energized equipment.***	x	x
GENERATOR		
Visual Inspection -- Verify, check panel housing, cracks, rust and weathering. Physical connections, corrosion, dirt/dust, etc.	x	x
Fuel -- Verify fuel levels in back up generators, document date of last fuel delivered from fuel service provider.	x	x

Oil -- Check the oil dipstick for proper level, Note condition of oil.	x	x
Verify operation (no switchover) -- Check, verify running of Generator, ease of start or difficult. Is generator "throttling" or running smooth. Any loud unusual noise? Etc.	x	x
Verify rollover and rollback -- ***Depends on configuration of Transfer switch. Auto versus manual*** Rollover should be tested weekly under load.	x	x
ANTENNAS/TOWER		
Tower Visual Inspection -- Ground level inspection only. Check tower lighting controller. verify registration posted.	x	x
HVAC		
Air Filter -- Check/Replace Air filter.	x	x
Coils -- Check coils for dirt.	x	x
Outdoor Unit -- Check that outdoor unit is unobstructed.	x	x
Wiring -- Wiring (insect/rodent damage).	x	x
Cooling / Heating -- Check each HVAC unit for cooling/heating.	x	x
Second Stage Cooling -- Verify HVAC second stage cooling.	x	x

	Standard	Enhanced
Preventive Maintenance Checks		
MICROWAVE		
RADIO		
Alarms -- Check alarm / event history.	x	x
Software -- Verify version of application.	x	x
Tx Frequency -- Verify Transmit frequency.	x	x
Tx Power -- Verify Transmit Power.	x	x
Rx Frequency -- Verify Receive frequency.	x	x
Rx Signal Level -- Verify Receive Signal Level and compare with install baseline documentation.	x	x
Save Configuration -- Save current configuration for off site storage.	x	x
WAVEGUIDE		
Visual Inspection -- Inspect for wear or dents.	x	x
Connection Verification -- Verify all connections are secured with proper hardware.	x	x
DEHYDRATOR		
Visual Inspection -- Inspect moisture window for proper color.	x	x
Pressure Verification -- Verify pressure of all lines.	x	x
Re-Pressurization -- Bleed lines temporarily to verify the dehydrator re-pressurizes.	x	x
Run Hours -- Record number of hours ran.	x	x

	Standard	Enhanced
Preventive Maintenance Checks		
TOWER		
STRUCTURE CONDITION		
Rust -- Check structure for rust.	x	x
Cross Members -- Check for damaged or missing cross members.	x	x
Safety Climb -- Check Safety Climb for damage.	x	x
Ladder -- Verify that ladder system is secured to tower.	x	x
Welds -- Check for cracks or damaged welds.	x	x
Outdoor Lighting/Photocell -- Test outdoor lighting and photocell.	x	x
Drainage Holes -- Check that drainage holes are clear of debris.	x	x
Paint -- Check paint condition.	x	x
TOWER LIGHTING		
Lights/Markers -- Verify all lights/markers are operational.	x	x
Day/Night Mode -- Verify Day and Night mode operation.	x	x
Power Cabling -- Verify that power cables are secured to tower.	x	x
ANTENNAS AND LINES		
Antennas -- Visually inspect Antennas for physical damage.	x	x
Transmission Lines -- Verify that all transmission lines are secure on the tower.	x	x
GROUNDING		
Structure Grounds -- Inspect grounding for damage or corrosion.	x	x
GUY LINES		
Tower Guys -- Check Guy wires for Fraying.	x	x
Guy Wire Hardware -- Check hardware for rust.	x	x
CONCRETE CONDITION		
Tower Base -- Check for Chips or cracks.	x	x

** For a tower mapping analysis or tower structure analysis, a tower company needs to provide a quote. It is not included in this SOW.