Field Force Manager Web Services Developer Guide

Revision History

Name	Date	Reason For Changes	Version
deleteLocation	11-29-2010	New enhancement	2.0.2
getDivision	11-29-2010	New enhancement	2.0.2

Introduction

Field Force Manager is mobile workforce management application that is delivered as an on-demand application. Field Force Manager allows companies to measure manage and optimize their mobile service organizations through a suite of application functionality. The Field Force Manager suite of web services allows 3rd party software systems to send and retrieve information from the Field Force Manager system.

Integration can be accomplished using a series of different technologies depending upon your needs and existing infrastructure.

Integration can be accomplished in many ways. Depending on whether you need to information returned to you on a five minute interval or only need information on a daily or weekly basis will affect which integration technology you choose. Below are the available technologies and suggested uses.

Overview

Field Force Manager offers a series of web services that allow customers and partners to extend and leverage existing investments in other software and systems by synchronizing and sharing data between the systems.

Authentication

Access to the Field Force Manager web services is provided via a username/password/company id combination of authentication information. This combination of information must be passed on each web service request. The capabilities and access of the requesting user are determined by the web services user specified role and associated security permissions.

The authentication parameters are passed in the http header, this is commonly confused with the SOAP header. The parameters need to be passed with each request.

To view WSDL or connect to web services go to the following URL
https://connectorprod.fieldforcemanager.com/services

You will be prompted to enter your web service user credentials to gain access to the services and WSDL's. You can create a web service user by logging into the application as an administrator and creating a user with a web service role.

The username for web services will be a combination of the username for the user and the company (username@companyID). For example the username for a user with a username of bob in company 9999 would be bob@9999. The password will be the password for the web service user.

Polling & Usage Restrictions

The Field Force Manager web services system is designed to allow the user to keep their system synchronized with other back office systems. Here are a couple restrictions to keep in mind when querying the system for data.

- The Field Force Manager system limits web service responses to returning up to 500 items. If you request returns more than 500 items, try limiting the date range or other filter ranges you're querying for.
- Field Force Manager recommends a five minutes interval between web service calls. The default maximum frequency for web requests is 250 calls, per service, per hour. This limit can be further increased. Please contact FFM customer support for further queries. Web service requests that happen more often are subject to being shut down by Field Force Manager system administrators.
- The Field Force Manager system is monitored for excessive usage and reserves the right to turn off web service accounts for excessive usage. Customers whose web services accounts are turned off due to excessive usage will be notified of the revoked credentials by Field Force Manager customer support.

Security & Roles

Access to Field Force Manager web services are controlled by the role of the user making the request. Each web service request must contain a valid username and password for the requesting user. If an invalid username and password are provided access to the service is restricted. The default web service role is configured with all web service permissions for the company. The permissions available to roles within a company are controlled by the package or features available to a company or account. The following is a list of all permissions that are available:

Web Service available by package:

Service	Limited	Basic	Premium
Company Admin Service		✓	✓
User Status Service		✓	✓
Landmark Service		✓	✓
Message Service		✓	✓
Alert Service		✓	✓
Job Service			✓
GPS Service			✓

Methods available by Service:

Web Service	Method	Permission
GpsService-0.0.1	getGpsByWorker	GPS Read
	getGps	GPS Read
	getGpsbydivision	GPSRead
	submitGps	Submit GPS
	getStopsandTravel	Stop/Travel Read
	getStopeandTravelByWorker	Stop/Travel Read

	getStopsAndTravelByDivision	Stop/Travel Read
	getStops	Stop/Travel Read
	getStopByWorker	Stop/Travel Read
	getStopsByDivision	Stop/Travel Read
	getTravel	Stop/Travel Read
	getTravelByWorker	Stop/Travel Read
	getTravelByDivision	Stop/Travel Read
CompanyAdminService-0.0.1	getWorkers	Worker Read
	getWorkerByName	Worker Read
	getWorkersByName	Worker Read
	createCompany	Company Create
	createWorker	Worker Create
	updateWorker	Worker Update
	createOrUpdateWorker	Worker Update
	deleteWorker	Worker Delete
	createDevice	Device Create
	getDevice	Device Read
	getDevices	Device Read
	updateDevice	Device Update
	createOrUpdateDevice	Device Update
	deleteDevice	Device Delete
	linkDeviceToWorker	Device Link
	getDivisions	All Groups or Divisions
MessageService-0.0.1	sendMessage	Send Message
UserStatusService-0.0.1	getTimesheets	Timesheets Read
	getTimesheetsByWorkerName	Timesheets Read
	submitUserAction	User Action Create
	getTimecardActions	Timesheets Read
	getTimecardActionsByWorkerName	Timesheets Read
	getUserForms	UserFormsRead
	getUserFormsByWorkerName	UserFormsRead
	getUserFormsByFormName	UserFormsRead
JobService-0.0.1	createJobs	Job Create
	updateJobs	Job Update
	createOrUpdateJobs	Job Create and Job Update
	createJob	Job Create
	updateJob	Job Update
	createOrUpdateJob	Job Create and Job Update
	getJobByReferenceNumber	Job Read
	SubmitJobAction	Submit Job Action
	getJobs	Job Read
	getJobsByDivision	Job Update
	assignWorkerToJob	Job Update
	deleteJob	Job Update

	restoreJob	Job Update
	terminateJob	Job Update
	terminateJobForWorker	Job Update
	unassignJob	Job Update
	removeWorkerFromJob	Job Update
	assignWorkerAndUpdateJob	Job Update
	getUpdatedActions	Job Update
	getUpdatedActionsByDivision	Job Update
	getJobActions	Job Update
	getJobActionsByDivision	Job Update
Landmark Service- 0.0.1	createLandmark	Landmark Create
	updateLandmark	Landmark Update
	createorUpdateLandmark	Landmark Create and Landmark Update
	getLandmarksByLandmarkType	Landmark Read
	deleteLocation	Deletes Landmark or Locations
Alert Service-0.0.1	getFiredAlerts	Fired Alert Read
	getFiredAlertsByWorker	Fired Alert Read
	getFiredAlertsByDivision	Fired Alert Read

Date & Time Formats

The Field Force Manager web services utilize dates and date ranges to allow the web service user to poll for data over a specified date range. The Field Force Manager web services use GMT/UTC date time zone for the date ranges of all queries. When making a web service request to the Field Force Manager system, the web service will query items that have been created or updated during the date range specified. The date range queried looks at changes to the Field Force Manager system during that timeframe, meaning that events that may have taken place in the past (GPS, Timecard Actions) which may have been stored and forwarded on a device will have a last updated date time of when they're received. These events will also have an entry date time that specifies when the event actually took place. The Field Force Manager system allows you to synchronize data using continuous date ranges that are inclusive on the startDate but exclusive on the endDate. When querying over a date range you should use the endDate provide to you as the the startDate for your next query. The endDate returned is the Field Force Manager system time and using it as your start date time will ensure no data is duplicated or missed.

The format of the date/time is as follows:

YYYY-MM-DD HH:MM:SS.MMM

Dates are stored in GMT/UTC so query parameters and returned data will be in this offset and format.

For example February 13, 2006 12:45 PM would be

```
2006-02-13 12:45:00.000
```

User Status Service

getTimesheets

(SvDate start, SvDateHolder end)

Description

This web service allows the retrieval of all timesheets completed by *all* workers in a company within a date range. The start and end dates must be specified in UTC. A timesheet is only created once a shift is completed. For example a shift starts when a user performs a Start Shift and ends once a Start Break or End Shift action is performed. The timesheet shift will not be available to be queried until the shift is complete or closed.

Method Signature

Ordinal	DataType	Can be NULL?	Description
start	SvDate	No	The starting time of the search range. The start date is inclusive. The start date must be a UTC date.
end	SvDateHolder	No	The ending time of the search range. The end date is exclusive. The end date must be a UTC date. The end date is adjusted if the date passed to the web service is later than the current database time. The current database time is then returned to the caller.
Return Result	SvTimesheet[]	No	For each timesheet that is found, a fully populated SvTimesheet object will be returned. If no timesheets are found, an empty array is returned.

SvTimesheet

Field	DataType	Comments
timecardName	String	The shift name. Is one of the following: On Duty, On Break, Off Duty, Logged In
workerName	String	The name of the worker who's timesheet it is.
startDate	SvDate	Timestamp of when the shift was started
endDate	SvDate	Timestamp of when the shift was ended. Can be null if the shift has not ended.

Validation Errors

"The start date cannot be null." – thrown if the start date is null

"The end date cannot be null." – thrown if the end date is null
"The end date must be after the start date." – thrown if the start date is after the end date.
"You are only allowed to query for 7 days of data at a time." – thrown if an attempt is made to query for more than 7 days of data.

getTimesheetsByWorkerName

(String workerName, SvDate start, SvDateHolder end)

Description

This web service allows the retrieval of all timesheets completed by a specified worker within a date range.

Method Signature

Ordinal	DataType	Can be NULL?	Description
workerName	String	No	The username of the worker whose timesheets are to be returned.
start	SvDate	No	The starting time of the search range. The start date is inclusive. The start date must be a UTC date.
end	SvDateHolder	No	The ending time of the search range. The end date is exclusive. The end date must be a UTC date. The end date is adjusted if the date passed to the web service is later than the current database time. This value is then returned to the caller.
Return Result	SvTimesheet[]	No	For each timesheet that is found, a fully populated SvTimesheet object will be returned. If no timesheets are found, an empty array is returned.

SvTimesheet

Field	DataType	Comments
timecardName	String	The shift name. Is one of the following: On Duty, On Break, Off Duty, Logged In
workerName	String	The name of the worker who's timesheet it is.
startDate	SvDate	Timestamp of when the shift was started

endDate	SvDate	Timestamp of when the shift was ended. Can be null if the shift has not ended.

Validation Errors

"The start date cannot be null." – thrown if the start date is null

"The end date cannot be null." – thrown if the end date is null

"The end date must be after the start date." – thrown if the start date is after the end date.

"You are only allowed to query for 7 days of data at a time." – thrown if an attempt is made to query for more than 7 days of data.

"The worker name cannot be null." – Thrown if the workerName is null or blank.

"Could not find a worker with the username." – Thrown if the worker corresponding to the input workerName cannot be found.

GetTimecardActions

(SvDate start, SvDateHolder end)

Description

The *getTimecardActions* service method provides the ability to retrieve timecard information over a specified time range. Only timecard data which was actually received by the system during the time range is returned. Thus, due to network latency or cell coverage issues between the mobile device and the server, this may result in SvUserAction objects being returned that have an excutionDateTime earlier than the startDate of the query. Form data is included within the SvUserAction object if a form was associated with the timecard. Note that login and logout actions are also returned as timecard data.

Method Signature

Ordinal	DataType	Required	Description
startDate	SvDate	Yes	Starting date for the range to check for changes. Starting date is inclusive
endDate	SvDate	Yes	Ending date for the range to check for changes. Ending date is exclusive.
Return Result	SvUserAction[]	Yes	An array of SvUserAction objects. An empty array is returned if no timecards are found. See documentation on SvUserAction for more details.

Validation Errors

"The start date cannot be null." – thrown if the start date is null

"The end date cannot be null." – thrown if the end date is null

"The end date must be after the start date." – thrown if the start date is after the end date.

"You are only allowed to query for 7 days of data at a time." – thrown if an attempt is made to query for more than 7 days of data.

GetTimecardActionsByWorkerName

(String workerName, SvDate start, SvDateHolder end)

Description

The getTimecardActionByWorkerName service method provides the ability to retrieve timecard information for a specific worker over a specified time range. Only timecard data which was actually received by the system during the time range is returned. Thus, due to network latency or cell coverage issues between the mobile device and the server, this may result in SvUserAction objects being returned that have an excutionDateTime earlier than the startDate of the query. Form data is included within the SvUserAction object if a form was associated with the timecard.

Method Signature

Ordinal	DataType	Required	Description
workerName	String	Yes	The username of the worker whose timecards are to be returned.
startDate	SvDate	Yes	Starting date for the range to check for changes. Starting date is inclusive
endDate	SvDate	Yes	Ending date for the range to check for changes. Ending date is exclusive.
Return Result	SvUserAction[]	Yes	An array of SvUserAction objects. An empty array is returned if no timecards are found. See documentation on SvUserAction for more details.

Validation Errors

"The start date cannot be null." – thrown if the start date is null

"The end date cannot be null." – thrown if the end date is null

"The end date must be after the start date." – thrown if the start date is after the end date.

"You are only allowed to query for 7 days of data at a time." – thrown if an attempt is made to query for more than 7 days of data.

"The worker name cannot be null." – Thrown if the workerName is null or blank.

"Could not find a worker with the username." – Thrown if the worker corresponding to the input workerName cannot be found.

GetUserForms
(SvDate start, SvDateHolder end)

Description

The *getUserForms* service method allows the download of user forms both adhoc forms and those forms associated with a timecard action. Only forms which were actually received by the system during the time range is returned. Thus, due to network latency or cell coverage issues between the mobile device and the server, this may result in SvUserAction objects being returned that have an excutionDateTime earlier than the startDate of the query. There are multiple overloaded versions of this method.

Method Signature

Ordinal	DataType	Can be NULL?	Description
startDate	SvDate	No	Starting date for the range to check for changes. Starting date is inclusive.
endDate	SvDate	No	Ending date for the range to check for changes. Ending date is exclusive.
Return Result	SvUserAction[]	No	An array of SvUserAction objects. An empty array is returned if no forms are found.

Validation Errors

"The start date cannot be null." – thrown if the start date is null
"The end date cannot be null." – thrown if the end date is null
"The end date must be after the start date." – thrown if the start date is after the end date.
"*You are only allowed to query for 7 days of data at a time*." – thrown if an attempt is made to query for more than 7 days of data.

GetUserFormsByWorkerName
(String workerName, SvDate start, SvDateHolder end)

Description

The *getUserFormsByWorkerName* service method allows the download of user forms both adhoc forms and those forms associated with a timecard action. Only forms which were actually received by the system during the time range is returned. Thus, due to network latency or cell coverage issues between the mobile device and the server, this may result in SvUserAction objects being returned that have an excutionDateTime earlier than the startDate of the query.

Method Signature

Ordinal	DataType	Can be NULL?	Description
workerName	String	No	Only forms for this worker will be retrieved.
startDate	SvDate	No	Starting date for the range to check for changes. Starting date is inclusive.
endDate	SvDate	No	Ending date for the range to check for changes. Ending date is exclusive.
Return Result	SvUserAction[]	No	An array of SvUserAction objects. An empty array is returned if no forms are found.

Validation Errors

"The start date cannot be null." – thrown if the start date is null
"The end date cannot be null." – thrown if the end date is null
"The end date must be after the start date." – thrown if the start date is after the end date.
"You are only allowed to query for 7 days of data at a time." – thrown if an attempt is made to query for more than 7 days of data.
"The worker name cannot be null." – Thrown if the workerName is null or blank.
"Could not find a worker with the username." – Thrown if the worker corresponding to the input workerName cannot be found.

GetUserFormsByFormName
(String formName, SvDate start, SvDateHolder end)

Description

The *getUserFormsByFormName* service method allows the download of user forms both adhoc forms and those forms associated with a timecard action. Only forms which were actually received by the system during the time range is returned. Thus, due to network latency or cell coverage issues between the mobile device and the

server, this may result in SvUserAction objects being returned that have an excutionDateTime earlier than the startDate of the query.

Method Signature

Ordinal	DataType	Can be NULL?	Description
formName	String	No	Only instances of the specified form will be returned.
startDate	SvDate	No	Starting date for the range to check for changes. Starting date is inclusive.
endDate	SvDate	No	Ending date for the range to check for changes. Ending date is exclusive.
Return Result	SvUserAction[]	No	An array of SvUserAction objects. An empty array is returned if no forms are found.

Validation Errors

"The start date cannot be null." – thrown if the start date is null

"The end date cannot be null." – thrown if the end date is null

"The end date must be after the start date." – thrown if the start date is after the end date.

"You are only allowed to query for 7 days of data at a time." – thrown if an attempt is made to query for more than 7 days of data.

"The form name must be populated" – Returned if the form name is blank.

"Could not find an active form with form name = <formName>" – Returned if a form with the submitted form name cannot be found in the Field Force Manager system.

submitUserAction

(SvUserAction userAction)

Description

This service allows a user action to be submitted. It is similar in functionality to the MDM1013 that exists on the device bridge. The SvUserAction object must have a workerName value of a worker that is in the Field Force Manager system. The actionName must be one of a set of valid actions. At this time, form data cannot be submitted through this method. This method requires that the specified worker must already be associated with a device in the Field Force Manager system.

Method Signature

Ordinal	DataType	Can be NULL?	Description
userAction	SvUserAction	No	The user action that has been executed. See the description of SvUserAction. A non-zero result code will be returned within the SvResult object if the actionName, dateTime or workerName is empty or null or the actionName is not one of a set of defined values.
Return Result	SvResult	No	A result object that indicates if the operation was successful. Any error codes or error messages will be returned here.

Validation Errors

"The worker name cannot be null." – Returned if the workerName field on the SvUserAction object is null or blank.

"Could not find a worker with the username: <username>" – Returned if the worker specified cannot be found.

"The execution datetime must be populated in the SvUserAction object." – Returned if the dateTime field on the SvUserAction object is null or blank.

"The action name must be populated in the SvUserAction object." – Returned if the actionName field on the SvUserAction object is null or empty.

"Unrecognized action name. The action name must be one of: 'Login', 'Exit', 'Start Shift', 'End Shift', 'Start Break', 'End Break' " – Returned if an invalid value is entered for the action name.

"A device could not be found for the input worker." – Returned if the worker is not associated with a device in the Field Force Manager system.

Job Service

createJobs
(SvJob[] jobs)

Description
This web service allows the creation of 1 to 100 in the Field Force Manager system. The createJobs web service will handle error conditions gracefully by indicating back to the caller which jobs failed. This method uses the new SvJob object as input. The SvJob object is similar to the deprecated SvWorkItem object but provides the ability to allow callers to do differential updates (see UpdateJobs web service). If over 100 jobs are input to be created, the additional jobs will be ignored and an error code and error message will be returned for these extra jobs.

Method Signature

Ordinal	DataType	Can be NULL?	Description
jobs	SvJob[]	No	Set of jobs that are to be created.
Return Result	SvJobServiceResult[]	No	An array of SvResult objects indicating success or failure for each job. The size of the return array will be the same as the size of the input array; there will be one result object for each input job object.

An error condition on one element does not prevent other jobs from being created. As an example, say that 3 jobs are input. If one job in the set has a validation error, then the SvJobServiceResult object for that job will indicate the error. The other two jobs will still be created.

Validation Errors
"*The input job array is null.*" – Thrown if the input SvJob array is null.
"*The input job array is empty.*" – Thrown if the input SvJob array is input.

Error Messages (on the SvResult object)
"*The reference number must be populated.*" – Returned if the reference number on the SvJob object is blank or null.
"*CreateJob called with a reference number that already exists in the system.*" – Returned if the reference number specified already exists.
"*The reference number must be less than 45 characters in length.*" – Returned if a reference number greater than 45 characters in length is input.
"*The work item type name is required for job create.*" – Returned if the work item (job type) type name is not valued on the SvJob object.
"*The work item type specified in job create was not found.*" – Returned if the work item type name is valued but is not a valid work item type name.

"*The priority is required for job create.*" – Returned if the priority is not valued on the SvJob object.

"*The priority name specified in job create was not found.*" – Returned if the priority is valued but is not a valid priority.

"*The worker specified in job create was not found.*" – Returned if the workerName field is valued but a worker with that username cannot be found.

"*The division specified in job create was not found.*" – Returned if the divisionName field is valued but a division with that name cannot be found.

"*Scheduled start must be before scheduled end.*" – Returned if the scheduledStartTime field is later than the scheduledEndTime field.

"*Cannot input actual start or actual end on job create.*" – Returned if the actualStartTime or actualEndTime fields are populated.

"*Cannot set the deleted datetime on job create or job update.*" – Returned if the deleted datatime field is populated.

"*Actions are not supported.*" – Returned if any actions are input.

"*Only 100 jobs can be processed in a single request. Additional jobs were ignored.*" – Returned if the user inputs more than 100 jobs.

SvJob Required Fields

The following fields are required for job create: ReferenceNumber, WorkItemTypeName and Priority. If a status is specified it will be used but may be overridden by a system calculated status.

createJob
(SvJob job)

Description
This web service allows the creation of a single job in the Field Force Manager system. The reference number must be populated and must not already exist in the Field Force Manager system.

Method Signature

Ordinal	DataType	Can be NULL?	Description
job	SvJob	No	The job that is to be created.
Return Result	SvJobServiceResult	No	An SvJobServiceResult object indicating success or failure for the job

Validation Errors
"*The input job object is null.*" – Thrown if the input SvJob object is null.

Error Messages (on the SvResult object)
"*The reference number must be populated.*" – Returned if the reference number on the SvJob object is blank or null.
"*CreateJob called with a reference number that already exists in the system.*" – Returned if the reference number specified already exists.
"*The reference number must be less than 45 characters in length.*" – Returned if a reference number greater than 45 characters in length is input.
"*The work item type name is required for job create.*" – Returned if the work item (job type) type name is not valued on the SvJob object.
"*The work item type specified in job create was not found.*" – Returned if the work item type name is valued but is not a valid work item type name.
"*The priority is required for job create.*" – Returned if the priority is not valued on the SvJob object.
"*The priority name specified in job create was not found.*" – Returned if the priority is valued but is not a valid priority.
"*The worker specified in job create was not found.*" – Returned if the workerName field is valued but a worker with that username cannot be found.
"*The division specified in job create was not found.*" – Returned if the divisionName field is valued but a division with that name cannot be found.
"*Scheduled start must be before scheduled end.*" – Returned if the scheduledStartTime field is later than the scheduledEndTime field.
"*Cannot input actual start or actual end on job create.*" – Returned if the actualStartTime or actualEndTime fields are populated.
"*Cannot set the deleted datetime on job create or job update.*" – Returned if the deleted datatime field is populated.
"*Actions are not supported.*" – Returned if any actions are input.
"*Only 100 jobs can be processed in a single request. Additional jobs were ignored.*" – Returned if the user inputs more than 100 jobs.

SvJob Required Fields

The following fields are required for job create: ReferenceNumber, WorkItemTypeName and Priority. If a status is specified it will be used but may be overridden by a system calculated status.

updateJobs

(SvJob[] jobs)

Description

This web service enables updating of one to many jobs in the Field Force Manager system. This method uses the new SvJob object as input. If the reference number of a job is not in the database, then an error is returned to the caller. If over 100 jobs are input to be updated, the additional jobs will be ignored and an error code and error message will be returned for these extra jobs.

Ignorable Values versus Null Values: The caller will be able to specify that certain values in the SvJob object should be ignored and the current value in the database maintained. This will allow a caller to choose which fields should be updated. Each field in the SvJob object is "wrapped" by a container object. For example the SvString holder object contains a single String as a value. To set the job description, the value string within the jobDescription SvString object will be set to the description. If the server is not to update the description, then the container SvString object should be set to null. See the SvJob documentation for more details.

Location updates: The ability to specify that a value is to be ignored only applies to the first level of the object graph. If the location field is non-null then the job's location is updated fully with the values of the SvLocation object and any null values in the SvLocation object cause null or empty values to be inserted in the database. For example if the address field is null, any address currently existing in the database will be removed.

Attribute updates:

On a job update, only the attributes that are supplied in the input attribute array will be modified. Any other attributes will be untouched. If an attribute is specified in the input array that is not currently created for the job, that attribute will be added to the job.

Method Signature

Ordinal	DataType	Can be NULL?	Description
jobs	SvJob[]	No	Set of jobs that are to be updated.
Return Result	SvJobServiceResult[]	No	An array of SvResult objects indicating success or failure for each job. The size of the return array will be the same as the size of the input array; there will be one result object for each input job object.

Validation Errors

"*The input job array is null.*" – Thrown if the input SvJob array is null.
"*The input job array is empty.*" – Thrown if the input SvJob array is empty.

Error Messages (on the SvResult object)

"*The reference number must be populated.*" – Returned if the reference number on the SvJob object is blank or null.
"*UpdateJob called with a reference number that does not exist in the system.*" – Returned if the reference number specified does not exist.
"*The reference number must be less than 45 characters in length.*" – Returned if a reference number greater than 45 characters in length is input.
"*Actions are not supported.*" – Returned if any actions are input.
"*Different job type than original not allowed.*" – Returned if the workItemTypeName input on job update is different than the job type that the job was created under.
"*The worker specified in job update was not found.*" – Returned if the worker to assign the job to could not be found.
"*The division specified in job update was not found.*" – Returned if the division specified was not found.
"*The priority name specified in job update was not found.*" – Returned if the priority name was not found.
"*Actual start must be before actual end if they are input.*" – Returned if the actual end time is valued and is before the actual start time.
"*Cannot set the deleted datetime on job create or job update.*" – Returned if the deleted datatime field is populated.
"*Only 100 jobs can be processed in a single request. Additional jobs were ignored.*" – Returned if the user inputs more than 100 jobs.

SvJob Required Fields

The only field that is required for updateJobs is the ReferenceNumber.

updateJob
(SvJob job)

Description
This web service allows the update of a single job in the Field Force Manager system. The reference number must be populated and must exist in the Field Force Manager system. See the description of updateJobs for more information on how differential updates are implemented.

Method Signature

Ordinal	DataType	Can be NULL?	Description
job	SvJob	No	Job that is to be updated.
Return Result	SvJobServiceResult	No	An SvJobServiceResult object indicating success or failure of the update.

Validation Errors

"The input job object is null." – Thrown if the input SvJob object is null.

Error Messages (on the SvResult object)

"The reference number must be populated." – Returned if the reference number on the SvJob object is blank or null.

"UpdateJob called with a reference number that does not exist in the system." – Returned if the reference number specified does not exist.

"The reference number must be less than 45 characters in length." – Returned if a reference number greater than 45 characters in length is input.

"Actions are not supported." – Returned if any actions are input.

"Different job type than original not allowed." – Returned if the workItemTypeName input on job update is different than the job type that the job was created under.

"The worker specified in job update was not found." – Returned if the worker to assign the job to could not be found.

"The division specified in job update was not found." – Returned if the division specified was not found.

"The priority name specified in job update was not found." – Returned if the priority name was not found.

"Actual start must be before actual end if they are input." – Returned if the actual end time is valued and is before the actual start time.

"Cannot set the deleted datetime on job create or job update." – Returned if the deleted datatime field is populated.

"Only 100 jobs can be processed in a single request. Additional jobs were ignored." – Returned if the user inputs more than 100 jobs.

SvJob Required Fields

The only field that is required for updateJobs is the ReferenceNumber.

createOrUpdateJobs

(SvJob[] jobs)

Description

This Web Service will do the work of determining whether or not each job is to be created or updated. If the reference number already exists in the database, then the job will be updated. Otherwise the job will be created. This Web Service will call into the same code as the createJob or updateJob web services. It is provided primarly as a convenience to our clients.

createOrUpdateJobs2

(SvJobExt[] jobs)

Description

This service creates or updates the jobs that are input in the jobs array. Determines if a create or update is to be made based upon the reference number of the job. If the reference number already exists then an update is done, otherwise a create is done. It also creates location if newLocation input parameter is true and links the location to the job based upon location reference input.

createOrUpdateJob

(SvJob job)

Description

This Web Service will do the work of determining whether or not the job is to be created or updated. If the reference number already exists in the database, then the job will be updated. Otherwise the job will be created. This Web Service will call into the same code as the createJob or updateJob web service methods. It is provided primarly as a convenience to our clients.

getJobByReferenceNumber

(String referenceNumber)

Description

The *getJobByReferenceNumber* service method provides the ability to retrieve a single job from the Field Force Manager system.

Method Signature

Ordinal	DataType	Can be NULL?	Description
referenceNumber	String	No	The reference number of the job to retrieve.
Return Result	SvJob	No	The job object which was retrieved. Attributes and actions on the job will also be returned. If a job with the corresponding reference number is not found, then null is returned.

Validation Errors

“The reference number must be populated.” – thrown if the reference number is null or blank

getJob

s(SvDate start, SvDateHolder end, boolean includeAttributes, boolean includeActions)

Description

The *getJobs* service method provides the ability to retrieve Jobs from Field Force Manager that have been changed, created or deleted within a specified time range. Examples of changes include status updates from devices (worker performed actions), worker assignment or unassignment, and updates to the job information such as the scheduled time or duration. Setting the includeAttributes and includeActions flags to false will minimize the length of time it takes the call to return.

Method Signature

Ordinal	DataType	Can be NULL?	Description
StartDate	SvDate	No	Starting date for the range to check for changes. The server queries for changes inclusive of this specified time (e.g., the query returns changes up to AND including the specified end time). The start date must be a UTC date.
EndDate	SvDate	No	Ending date for the range to check for changes. The server queries for changes exclusive of this specified time (e.g., the query returns changes up to BUT NOT including the specified end time). The end date must be a UTC date. The end date is adjusted if the date passed to the web service is later than the current database time. This value is then returned to the caller.
IncludeAttributes	Boolean	No	Indicates whether or not to query for job attribute changes. If false, job attributes will also not be returned in the SvJob object.
IncludeActions	Boolean	No	Indicates whether or not to query for job action changes. If false, job actions will also not be returned in the SvJob object.
Return Result	SvJob[]	No	Returns an array of SvJob objects. This array can be empty (length=0) if no changes occurred within the specified interval, but it will not return null.

Validation Errors

"The start date cannot be null." – thrown if the start date is null

"The end date cannot be null." – thrown if the end date is null

"The end date must be after the start date." – thrown if the start date is after the end date.

"You are only allowed to query for 7 days of data at a time." – thrown if an attempt is made to query for more than 7 days of data.

getJobsByDivision

(SvDate start, SvDateHolder end, boolean includeAttributes, boolean includeActions, SvDivision[] divisions)

Description

The *getJobsByDivision* service method provides the ability to retrieve Jobs from Field Force Manager that have been changed, created or deleted within a specified time range and belong to one of the input divisions. It has the same behavior as the getJobs service method but allows filtering by division. If a null or empty divisions array is input then all divisions are searched.

Ordinal	DataType	Can be NULL?	Description
StartDate	SvDate	No	Starting date for the range to check for changes. The server queries for changes inclusive of this specified time (e.g., the query returns changes up to AND including the specified end time). The start date must be a UTC date.
EndDate	SvDate	No	Ending date for the range to check for changes. The server queries for changes exclusive of this specified time (e.g., the query returns changes up to BUT NOT including the specified end time). The end date must be a UTC date. The end date is adjusted if the date passed to the web service is later than the current database time. This value is then returned to the caller.
IncludeAttributes	Boolean	No	Indicates whether or not to query for job attribute changes. If false, job attributes will also not be returned in the SvJob object.
IncludeActions	Boolean	No	Indicates whether or not to query for job action changes. If false, job actions will also not be returned in the SvJob object.
Divisions	String[]	Yes	List of divisions for which to return job actions. The query is restricted to only returning these divisions.
Return Result	SvJob[]	No	Returns an array of SvJob objects. This array can be empty (length=0) if no changes occurred within the specified interval, but it will not return null.

assignWorkerToJob

(String referenceNumber, String workerName)

Description

The *assignWorkerToJob* service method provides the ability to assign a worker to a job. The referenceNumber and workerName must be unique within the company. Note that if a job has been completed, additional assignments are ignored.

Method Signature

Ordinal	DataType	Can be NULL?	Description
referenceNumber	String	No	The referenceNumber of the job
workerName	String	No	The username of the worker who will be assigned the job.
Return Result	SvResult	No	The result object. Any errors in assigning the job are indicated in the SvResult object.

Error Messages (on the SvResult object)

"The worker with the following name is already assigned to the job: <workerName>." – Returned if the worker is already assigned to the job.

"The reference number must be populated." – Returned if the reference number parameter is blank.

"The reference number supplied does not exist in the system. Reference number: <referenceNumber>" – Returned if a job with the supplied reference number cannot be found.

"The worker name must be populated." – Returned if the worker name parameter is blank.

"The worker with the following name was not found: <workerName>." – Returned if a user with the supplied worker name cannot be found.

unassignJob

(String referenceNumber)

Description

The *unassignJob* service method provides the ability to remove the active assignment from a job. The referenceNumber must be unique within the company. Jobs which are completed will not be affected by unassignment.

Method Signature

Ordinal	DataType	Can be NULL?	Description
referenceNumber	String	No	The referenceNumber of the job.
Return Result	SvResult	No	The result object. Any errors in unassigning the worker are indicated in the SvResult object.

Error Messages (on the SvResult object)

"The reference number must be populated." – Returned if the reference number parameter is blank.

"The reference number supplied does not exist in the system. Reference number: <referenceNumber>" – Returned if a job with the supplied reference number cannot be found.

removeWorkerFromJob

(String referenceNumber, String workerName)

Description

The *removeWorkerFromJob* service method provides the ability to unassign a worker from a job. It differs from the *unassignJob* method in that it checks that the worker input is actually assigned to the job before removing the worker assignment. The worker name and the reference number must be unique within the company. Jobs which are completed will not be affected.

Method Signature

Ordinal	DataType	Can be NULL?	Description
referenceNumber	String	No	The referenceNumber of the job.
workerName	String	No	The username of the worker who will be unassigned from the job.
Return Result	SvResult[]	No	The result object. Any errors in removing the worker from the job are indicated in the SvResult object.

Error Messages (on the SvResult object)

"The worker with the following name is not currently assigned to the job: <workerName>." – Returned if the worker is not assigned to the job.

"The reference number must be populated." – Returned if the reference number parameter is blank.

"The reference number supplied does not exist in the system. Reference number: <referenceNumber>" – Returned if a job with the supplied reference number cannot be found.

"The worker name must be populated." – Returned if the worker name parameter is blank.

"The worker with the following name was not found: <workerName>." – Returned if a user with the supplied worker name cannot be found.

deleteJob

(String referenceNumber)

Description

The *deleteJob* method provides the ability to unconditionally delete a job regardless of its current status. The referenceNumber must be unique within the company.

Method Signature

Ordinal	DataType	Can be NULL?	Description
referenceNumber	String	No	The referenceNumber of the job
Return Result	SvResult	No	The result object. Any errors in deleting the job are indicated in the SvResult object.

Error Messages (on the SvResult object)

"The reference number must be populated." – Returned if the reference number parameter is blank.

"The reference number supplied does not exist in the system. Reference number: <referenceNumber>" – Returned if a job with the supplied reference number cannot be found.

terminateJob

(String referenceNumber)

Description

The *terminateJob* method provides the ability to unconditionally terminate (complete) a job. The actual end time on the job will be set to the time supplied (or the system time if no end time is supplied) and the job status will be set to 'Terminated'.

Method Signature

Ordinal	DataType	Can be NULL?	Description
referenceNumber	String	No	The referenceNumber of the job
endTime	SvDate	Yes	The time to use as the completion time on the job. If null, then the Field Force Manager system time is used.
Return Result	SvResult	No	The result object. Any errors in terminating the job are indicated in the SvResult object.

Error Messages (on the SvResult object)

"The reference number must be populated." – Returned if the reference number parameter is blank.

"The reference number supplied does not exist in the system. Reference number: <referenceNumber>" – Returned if a job with the supplied reference number cannot be found.

terminateJobForWorker

(String referenceNumber, String workerName)

Description

The *terminateJobForWorker* method provides the ability to unconditionally terminate (complete) a job. The actual end time on the job will be set to the time supplied (or the system time if no end time is supplied) and the job status will be set to 'Terminated'. This method differs from the *terminateJob* method in that it checks that the worker is actually assigned to the job before terminating the job. The worker name and the reference number must be unique within the company.

Method Signature

Ordinal	DataType	Can be NULL?	Description
referenceNumber	String	No	The referenceNumber of the job
workerName	String	No	The username of a worker in Field Force Manager.
endTime	SvDate	Yes	The time to use as the completion time on the job. If null, then the Field Force Manager system time is used.
Return Result	SvResult	No	The result object. Any errors in terminating the job are indicated in the SvResult object.

Error Messages (on the SvResult object)

"The worker with the following name is not currently assigned to the job: <workerName>." – Returned if the worker is not assigned to the job.

"The reference number must be populated." – Returned if the reference number parameter is blank.

"The reference number supplied does not exist in the system. Reference number: <referenceNumber>" – Returned if a job with the supplied reference number cannot be found.

"The worker name must be populated." – Returned if the worker name parameter is blank.

"The worker with the following name was not found: <workerName>." – Returned if a user with the supplied worker name cannot be found.

restoreJob

(String referenceNumber)

Description

The *restoreJob* method provides the ability to restore (undelete) a job which has previously been deleted. The job will be restored in the same state as when it was deleted.

Method Signature

Ordinal	DataType	Can be NULL?	Description
referenceNumber	String	No	The referenceNumber of the job
Return Result	SvResult	No	The result object. Any errors in restoring the job are indicated in the SvResult object.

Error Messages (on the SvResult object)

"The reference number must be populated." – Returned if the reference number parameter is blank.

"The reference number supplied does not exist in the system. Reference number: <referenceNumber>" – Returned if a job with the supplied reference number cannot be found.

getUpdatedActionsByDivision

(SvDate start, SvDateHolder end, String[] divisions)

Description

The *getUpdatedActionsByDivision* service method provides the ability to retrieve job actions from Field Force Manager that have been created or changed within a specified time range. Only changed actions are returned, the accumulated set of actions that have been performed can only be returned by retrieving the job itself. Actions are returned in the order that they were performed.

Method Signature

Ordinal	DataType	Can be NULL?	Description
StartDate	SvDate	No	Starting date for the range to check for changes. The server queries for changes inclusive of this specified time (e.g., the query returns changes up to AND including the specified end time). The start date must be a UTC date.
EndDate	SvDate	No	Ending date for the range to check for changes. The server queries for changes exclusive of this specified time (e.g., the query returns changes up to BUT NOT including the specified end time). The end date must be a UTC date. The end date is adjusted if the date passed to the web service is later than the current database time. This value is then returned to the caller.
Divisions	String[]	Yes	List of divisions for which to return job actions. The query is restricted to only returning these divisions.
Return Result	SvJobActionUpdate[]	No	Returns an array of SvJobActionUpdate objects. This array can be empty (length=0) if no changes occurred within the specified interval, but it will not return null.

The intended usage of this service call is to provide a way to periodically synchronize an external system's data with Field Force Manager. The external system is expected to call this service incrementally using adjacent time ranges such as:

Call 1: 2004-01-28 13:50:00.0000 to 2004-01-28 14:52:00.000
Call 2: 2004-01-28 14:52:00.0000 to 2004-01-28 15:49:07.000
Call 3: 2004-01-28 15:49:07.0000 to 2004-01-28 16:55:43.000

In this example, the external system is querying at intervals of 1 hour. The external system must keep track of the last call's endTime and should use the last endTime as the startTime for the next call. The results returned are inclusive on the startTime and exclusive on the endTime to prevent the returned results from overlapping between two adjacent calls.

Expected behaviors

- If no changes are detected for any WorkItems, an empty array is returned.
- If either the start or end timedate parameters are null, an exception is thrown.
- If the endDate is equal to or before the startData, an exception is thrown.

Validation Errors

"The start date cannot be null." – thrown if the start date is null
"The end date cannot be null." – thrown if the end date is null
"The end date must be after the start date." – thrown if the start date is after the end date.
"You are only allowed to query for 7 days of data at a time." – thrown if an attempt is made to query for more than 7 days of data.

getUpdatedActions

(SvDate start, SvDateHolder end)

Description

The *getUpdatedActions* method functions the same as the *getUpdatedActionsByDivision* method but does not filter the result by division. All updated actions within the company are returned.

Ordinal	DataType	Can be NULL?	Description
StartDate	SvDate	No	Starting date for the range to check for changes. The server queries for changes inclusive of this specified time (e.g., the query returns changes up to AND including the specified end time). The start date must be a UTC date.
EndDate	SvDate	No	Ending date for the range to check for changes. The server queries for changes exclusive of this specified time (e.g., the query returns changes up to BUT NOT including the specified end time). The end date must be a UTC date. The end date is adjusted if the date passed to the web service is later than the current database time. This value is then returned to the caller.
Return Result	SvJobActionUpdate[]	No	Returns an array of SvJobActionUpdate objects. This array can be empty (length=0) if no changes occurred within the specified interval, but it will not return null.

getJobActionsByDivision

(SvDate start, SvDateHolder end, String[] divisions)

Description

The *getJobActionsByDivision* service method provides the ability to retrieve job actions from Field Force Manager that have been created within a specified time range. Only created actions are returned, the accumulated set of actions that have been performed can only be returned by retrieving the job itself. Actions are returned in the order that they were performed.

Method Signature

Ordinal	DataType	Can be NULL?	Description
StartDate	SvDate	No	Starting date for the range to check for newly created job actions. The server queries for changes inclusive of this specified time (e.g., the query returns changes up to AND including the specified end time). The start date must be a UTC date.
EndDate	SvDate	No	Ending date for the range to check for newly created job actions. The server queries for changes exclusive of this specified time (e.g., the query returns newly created job actions up to BUT NOT including the specified end time). The end date must be a UTC date. The end date is adjusted if the date passed to the web service is later than the current database time. This value is then returned to the caller.
Divisions	String[]	Yes	List of divisions for which to return job actions. The query is restricted to only returning these divisions.
Return Result	SvJobActionUpdate[]	No	Returns an array of SvJobActionUpdate objects. This array can be empty (length=0) if no new job actions were created within the specified interval, but it will not return null.

The intended usage of this service call is to provide a way to periodically synchronize an external system's data with Field Force Manager. The external system is expected to call this service incrementally using adjacent time ranges such as:

Call 1: 2004-01-28 13:50:00.0000 to 2004-01-28 14:52:00.000
Call 2: 2004-01-28 14:52:00.0000 to 2004-01-28 15:49:07.000
Call 3: 2004-01-28 15:49:07.0000 to 2004-01-28 16:55:43.000

In this example, the external system is querying at intervals of 1 hour. The external system must keep track of the last call's endTime and should use the last endTime as the startTime for the next call. The results returned are inclusive on the startTime and exclusive on the endTime to prevent the returned results from overlapping between two adjacent calls.

Expected behaviors

- If no changes are detected for any WorkItems, an empty array is returned.
- If either the start or end timedate parameters are null, an exception is thrown.
- If the endDate is equal to or before the startData, an exception is thrown.

Validation Errors

"The start date cannot be null." – thrown if the start date is null
"The end date cannot be null." – thrown if the end date is null
"The end date must be after the start date." – thrown if the start date is after the end date.
"You are only allowed to query for 7 days of data at a time." – thrown if an attempt is made to query for more than 7 days of data.

getJobActions

(SvDate start, SvDateHolder end)

Description

The *getJobActions* method functions the same as the *getJobActionsByDivision* method but does not filter the result by division. All newly created job actions within the company are returned.

Ordinal	DataType	Can be NULL?	Description
StartDate	SvDate	No	Starting date for the range to check for newly created job actions. The server queries for changes inclusive of this specified time (e.g., the query returns changes up to AND including the specified end time). The start date must be a UTC date.
EndDate	SvDate	No	Ending date for the range to check for newly created job actions. The server queries for changes exclusive of this specified time (e.g., the query returns newly created job actions up to BUT NOT including the specified end time). The end date must be a UTC date. The end date is adjusted if the date passed to the web service is later than the current database time. This value is then returned to the caller.
Return Result	SvJobActionUpdate[]	No	Returns an array of SvJobActionUpdate objects. This array can be empty (length=0) if no new job actions were created within the specified interval, but it will not return null.

assignWorkerAndUpdateJob

(String workerName, SvJob svJob)

Description

This method is available in the wsdl but will throw an exception if called. It is not supported for general usage. It is possible to assign a worker during the updateJob method call by setting the workerName property.

Method Signature:

Ordinal	DataType	Can be NULL?	Description
workername	string	No	The name of the worker to assign to the job
referenceNumber	string	No	The reference number of the job
Return Result	SvResult	No	

submitJobAction

(String jobAction, String referenceNumber)

Description

This method is used to submit job actions

Method Signature:

Ordinal	DataType	Can be NULL?	Description
dateTime	SvDate	No	The datetime the job action should be recorded as happening
form	SvForm	Yes	The form object that should be attached to the action
location	SvLocation	Yes	The location object of where the action was performed
name	String	No	The name of the job action that is being performed

workerName	String	No	The user name of the worker the action is being performed for.
Return Result	SvResult	No	

JobService Error Codes

Error Code	Description of Error
General Error Codes (Applies across multiple methods)	
0	Success (No Error)
1	The reference number was not valued.
2	A job with the supplied reference number does not exist.
3	The worker name was not valued.
4	A worker with the supplied worker name does not exist.
5	An error occurred persisting the data. The specific error message will be supplied in the SvResult message string.
500	Unable to connect to the web service.
Error codes specific to unassignment	
6	The worker is not currently assigned to the job.
Error codes specific to assignment	
7	The worker is already assigned to the job.
Error codes specific to job create or job update	
8	The input job object is null.
10	The reference number supplied already exists.
11	The work item type name is required but was not supplied.
12	The work item type name supplied does not exist.
13	The priority of the job is required but was not supplied.
14	The priority name supplied is not a valid priority.
15	The division name supplied is not a valid division.
16	The scheduled start time or scheduled end time is more than 30 years in the future.
17	The scheduled start time of the job is after the scheduled end time.
18	The job actual start time or the job actual end time is input on job create or job update. This is not allowed.

19	Actions cannot be input on job create or job update.
20	The reference number supplied is more than 45 characters in length.
21	Attributes required by the work item type were not present on job create.
22	More than 100 jobs were input for creation or updating.
23	The customer type supplied does not exist.
24	The job category supplied does not exist.
25	The deleted datetime cannot be set on job create or job update.

GPS Service

GetGps

Description

The getGps (String, SvDate, SvDate) service method provides the ability to retrieve GPS information for an entire company over a specified time range. The intended usage of this service call is to provide a way to periodically synchronize an external system's data with Field Force Manager. The external system is expected to call this service incrementally using adjacent time ranges such as:

Call 1: 2004-01-28 13:50:00.0000 to 2004-01-28 14:52:00.000
Call 2: 2004-01-28 14:52:00.0000 to 2004-01-28 15:49:07.000
Call 3: 2004-01-28 15:49:07.0000 to 2004-01-28 16:55:43.000

In this example, the external system is querying at an intervals of 1 hour. The external system must keep track of the last call's endTime and should use the last endTime as the startTime for the next call. The results returned are inclusive on the startTime and exclusive on the endTime to prevent the returned results from overlapping between two
adjacent calls.

Method Signature:

Ordinal	DataType	Can be NULL?	Description
StartDate	SvDate	No	The starting date time for a requested range of results. The server queries for changes inclusive of this specified time (e.g., the query returns changes up to AND including the specified end time). The time date format must be provided as: yyyy-MM-dd HH:mm:ss.SSS e.g., to specify a start time of January 28th, 2004 at 1:50PM, the format would be 2004-01-28 13:50:00.000
EndDate	SvDate	No	Ending date for the range to changes. The server queries for

			changes changes. The server queries for changes exclusive of this specified time (e.g., the query returns changes up to BUT NOT including the specified end time). The time date format must be provided as: yyyy-MM-dd HH:mm:ss.SSS e.g., to specify a start time of January 28th, 2004 at 1:50PM, the format would be 2004-01-28 13:50:00.000
Return Result	SvGpsPositio n[]	No	An array of SvGpsPosition instances. See documentation on SvGpsPosition for more details

Expected behaviors

- GPS positions are returned with a coverage status code. Valid GPS positions have a value of 0 for the status code. Invalid GPS position will have a non-0 status code value. The status code values indicate why the GPS acquisition failed (e.g., user
  indoors and cannot get GPS, battery too low, user turned off GPS permissions, etc.)
- If the status code value for a position is non-0 (invalid), the latitude and longitude will be 0.
- If the endDate is equal to or before the startDate, an exception is thrown.
- If either the start or end time date parameters are null, an exception is thrown.
- If no GPS changes are detected for the company, an empty array is returned (i.e., Field Force Manager received no GPS information for the specified time range).

GetGpsByDivision

Description

The getGpsByDivision(String, SvDate, SvDate) service method provides the ability to retrieve GPS information for a specified division over a specified time range. The division must exist in Field Force Manager, otherwise an exception is thrown. The intended usage of this service call is to provide a way to periodically synchronize an external system's data with Field Force Manager. The external system is expected to call this service
incrementally using adjacent time ranges such as:

Call 1: 2004-01-28 13:50:00.0000 to 2004-01-28 14:52:00.000
Call 2: 2004-01-28 14:52:00.0000 to 2004-01-28 15:49:07.000
Call 3: 2004-01-28 15:49:07.0000 to 2004-01-28 16:55:43.000

In this example, the external system is querying at an intervals of 1 hour. The external system must keep track of the last call's endTime and should use the last endTime as the startTime for the next call. The results returned are inclusive on the startTime and exclusive on the endTime to prevent the returned results from overlapping between two
adjacent calls.

Method Signature:

Ordinal	DataType	Can be NULL?	Description
Divisions	String[]	No	List of divisions for which to return GPS. The query is restricted to only returning these divisions.
StartDate	SvDate	No	The starting date time for a requested range of results. The server queries for changes inclusive of this specified time (e.g., the query returns changes up to AND including the specified end time). The time date format must be provided as: yyyy-MM-dd HH:mm:ss.SSS e.g., to specify a start time of January 28th, 2004 at 1:50PM, the format would be 2004-01-28 13:50:00.000
EndDate	SvDate	No	Ending date for the range to changes. The server queries for changes changes. The server queries for changes exclusive of this specified time (e.g., the query returns changes up to BUT NOT including the specified end time). The time date format must be provided as: yyyy-MM-dd HH:mm:ss.SSS e.g., to specify a start time of January 28th, 2004 at 1:50PM, the format would be 2004-01-28 13:50:00.000

Return Result	SvGpsPosition[]	No	An array of SvGpsPosition instances. See documentation on SvGpsPosition for more details

Expected behaviors

- GPS positions are returned with a coverage status code. Valid GPS positions have a value of 0 for the status code. Invalid GPS position will have a non-0 status code value. The status code values indicate why the GPS acquisition failed (e.g., user
  indoors and cannot get GPS, battery too low, user turned off GPS permissions, etc.)
- If the status code value for a position is non-0 (invalid), the latitude and longitude will be 0.
- If the endDate is equal to or before the startDate, an exception is thrown.
- If either the start or end timedate parameters are null, an exception is thrown.
- If no GPS changes are detected for the division, an empty array is returned (i.e., Field Force Manager received no GPS information for the specified time range).

GetGpsByWorker

Description

The getGpsByWorker(String, SvDate, SvDate) service method provides the ability to retrieve GPS information for a specified worker over a specified time range. The worker must exist in Field Force Manager, otherwise an exception is thrown. The intended usage of this service call is to provide a way to periodically synchronize an external system's data with Field Force Manager. The external system is expected to call this service
incrementally using adjacent time ranges such as:

Call 1: 2004-01-28 13:50:00.0000 to 2004-01-28 14:52:00.000
Call 2: 2004-01-28 14:52:00.0000 to 2004-01-28 15:49:07.000
Call 3: 2004-01-28 15:49:07.0000 to 2004-01-28 16:55:43.000

In this example, the external system is querying at an intervals of 1 hour. The external system must keep track of the last call's endTime and should use the last endTime as the startTime for the next call. The results returned are inclusive on the startTime and exclusive on the endTime to prevent the returned results from overlapping between two
adjacent calls.

Method Signature:

Ordinal	DataType	Can be NULL?	Description

WorkerName	String	No	The username for a valid user in application
StartDate	SvDate	No	The starting date time for a requested range of results. The server queries for changes inclusive of this specified time (e.g., the query returns changes up to AND including the specified end time). The time date format must be provided as: yyyy-MM-dd HH:mm:ss.SSS e.g., to specify a start time of January 28th, 2004 at 1:50PM, the format would be 2004-01-28 13:50:00.000
EndDate	SvDate	No	Ending date for the range to changes. The server queries for changes changes. The server queries for changes exclusive of this specified time (e.g., the query returns changes up to BUT NOT including the specified end time). The time date format must be provided as: yyyy-MM-dd HH:mm:ss.SSS e.g., to specify a start time of January 28th, 2004 at 1:50PM, the format would be 2004-01-28 13:50:00.000
Return Result	SvGpsPositio n[]	No	An array of SvGpsPosition instances. See documentation on SvGpsPosition for more details

Expected behaviors

- The worker specified by the WorkerName parameter must exist, otherwise an exception is thrown.
- GPS positions are returned with a coverage status code. Valid GPS positions have a value of 0 for the status code. Invalid GPS position will have a non-0 status code value. The status code values indicate why the GPS acquisition failed (e.g., user

indoors and cannot get GPS, battery too low, user turned off GPS permissions, etc.)
- If the status code value for a position is non-0 (invalid), the latitude and longitude will be 0.
- If the endDate is equal to or before the startData, an exception is thrown.
- If either the start or end timedate parameters are null, an exception is thrown.
- If no GPS changes are detected for the worker, an empty array is returned (i.e., Field Force Manager received no GPS information for the specified time range).

getStopsAndTravel

Description
The getStopsandTravel service method provides the ability to retrieve stop or travel segments for all workers for a specified time period. The method will return stop/travel segment where both the start and end datetime fall within the specified date time range.

Method Signature

Ordinal	DataType	Can be NULL?	Description
StartDate	**SvDate**	**No**	The starting date time for a requested range of results. The server queries for changes inclusive of this specified time (e.g., the query returns changes up to AND including the specified end time). The time date format must be provided as: yyyy-MM-dd HH:mm:ss.SSS e.g., to specify a start time of January 28th, 2004 at 1:50PM, the format would be 2004-01-28 13:50:00.000
EndDate	**SvDate**	**No**	Ending date for the range to changes. The server queries for changes changes. The server queries for changes exclusive of this specified time (e.g., the query returns changes up to BUT NOT including the specified end time). The time date format

			must be provided as: yyyy-MM-dd HH:mm:ss.SSS e.g., to specify a start time of January 28th, 2004 at 1:50PM, the format would be 2004-01-28 13:50:00.000
Return Result	**SvStopTravel**	**No**	An array of SvStopTravel.

SvStopTravel

Field	DataType	Comments
address	SvAddress	Address Object
coordinate	SvCoordinate	Coordinate Object
distance	double	The distance traveled in the segment. The distance is only valid for non-stopped segments
endTime	SvDate	The date time the stop or travel segment began
jobReferenceNumber	String	The reference number of a job if the stop was determined to have occurred at a job
landmarkName	String	The name of the landmark if the stop was determined to have occurred at a location
startTime	SvDate	The date time the stop or travel segment started
stoppedFlag	Boolean	Whether or not the segment was a stop. If true the segment is a stop, if false the segment is a travel segment.
timecardName	String	The timecard status for a segment. The possible statuses are Logged Off, Logged In, On Duty, On Break
workerName	String	The username of the worker who performed the stop or travel segement.

getStopsAndTravelByWorker

Description
This service method returns stop and travel for the specified time range and specified worker. The method will return stop/travel segment where both the start and end datetime fall within the specified date time range.

Method Signature

Ordinal	DataType	Can be NULL?	Description
StartDate	SvDate	No	The starting date time for a requested range of results. The server queries for changes inclusive of this specified time (e.g., the query returns changes up to AND including the specified end time). The time date format must be provided as: yyyy-MM-dd HH:mm:ss.SSS e.g., to specify a start time of January 28th, 2004 at 1:50PM, the format would be 2004-01-28 13:50:00.000
EndDate	SvDate	No	Ending date for the range to changes. The server queries for changes changes. The server queries for changes exclusive of this specified time (e.g., the query returns changes up to BUT NOT including the specified end time). The time date format must be provided as: yyyy-MM-dd HH:mm:ss.SSS e.g., to specify a start time of January 28th, 2004 at 1:50PM, the format would be 2004-01-28 13:50:00.000
WorkerName	String	No	The username for a valid user in application
Return Result	SvStopTravel	No	An array of SvStopTravel.

getStopsAndTravelByDivision

Description

This service method returns stops and travel for the specified time range and divisions(groups) The method will return stop/travel segment where both the start and end datetime fall within the specified date time range.

Method Signature

Ordinal	DataType	Can be NULL?	Description
StartDate	SvDate	No	The starting date time for a requested range of results. The server queries for changes inclusive of this specified time (e.g., the query returns changes up to AND including the specified end time). The time date format must be provided as: yyyy-MM-dd HH:mm:ss.SSS e.g., to specify a start time of January 28th, 2004 at 1:50PM, the format would be 2004-01-28 13:50:00.000
EndDate	SvDate	No	Ending date for the range to changes. The server queries for changes changes. The server queries for changes exclusive of this specified time (e.g., the query returns changes up to BUT NOT including the specified end time). The time date format must be provided as: yyyy-MM-dd HH:mm:ss.SSS e.g., to specify a start time of January 28th, 2004 at 1:50PM, the format would be 2004-01-28 13:50:00.000
Divisions	String[]	Yes	List of divisions for which to return. The query is restricted to only returning these divisions.
Return Result	SvStopTravel	No	An array of SvStopTravel.

getStops

Description
This method returns stops for the specified time range. The method will return stop/travel segment where both the start and end datetime fall within the specified date time range.

Method Signature

Ordinal	DataType	Can be NULL?	Description
StartDate	**SvDate**	**No**	The starting date time for a requested range of results. The server queries for changes inclusive of this specified time (e.g., the query returns changes up to AND including the specified end time). The time date format must be provided as: yyyy-MM-dd HH:mm:ss.SSS e.g., to specify a start time of January 28th, 2004 at 1:50PM, the format would be 2004-01-28 13:50:00.000
EndDate	**SvDate**	**No**	Ending date for the range to changes. The server queries for changes changes. The server queries for changes exclusive of this specified time (e.g., the query returns changes up to BUT NOT including the specified end time). The time date format must be provided as: yyyy-MM-dd HH:mm:ss.SSS e.g., to specify a start time of January 28th, 2004 at 1:50PM, the format would be 2004-01-28 13:50:00.000
Return Result	**SvStopTravel**	**No**	An array of SvStopTravel.

getStopsByWorker

Description
This method returns stop for a specified time range for a specified worker. The method will return stop/travel segment where both the start and end datetime fall within the specified date time range.

Method Signature

Ordinal	DataType	Can be NULL?	Description
StartDate	**SvDate**	**No**	The starting date time for a requested range of results. The server queries for changes inclusive of this specified time (e.g., the query returns changes up to AND including the specified end time). The time date format must be provided as: yyyy-MM-dd HH:mm:ss.SSS e.g., to specify a start time of January 28th, 2004 at 1:50PM, the format would be 2004-01-28 13:50:00.000
EndDate	**SvDate**	**No**	Ending date for the range to changes. The server queries for changes changes. The server queries for changes exclusive of this specified time (e.g., the query returns changes up to BUT NOT including the specified end time). The time date format must be provided as: yyyy-MM-dd HH:mm:ss.SSS e.g., to specify a start time of January 28th, 2004 at 1:50PM, the format would be 2004-01-28 13:50:00.000
WorkerName	String	No	The username for a valid user in application

Return Result	SvStopTravel	No	An array of SvStopTravel.

getStopsByDivision

Description
This method returns stop for a specified time range for specified divisions(Groups) The method will return stop/travel segment where both the start and end datetime fall within the specified date time range.

Method Signature

Ordinal	DataType	Can be NULL?	Description
StartDate	SvDate	No	The starting date time for a requested range of results. The server queries for changes inclusive of this specified time (e.g., the query returns changes up to AND including the specified end time). The time date format must be provided as: yyyy-MM-dd HH:mm:ss.SSS e.g., to specify a start time of January 28th, 2004 at 1:50PM, the format would be 2004-01-28 13:50:00.000
EndDate	SvDate	No	Ending date for the range to changes. The server queries for changes changes. The server queries for changes exclusive of this specified time (e.g., the query returns changes up to BUT NOT including the specified end time). The time date format must be provided as: yyyy-MM-dd HH:mm:ss.SSS e.g., to specify a start time of January 28th, 2004 at 1:50PM, the format would be 2004-01-28 13:50:00.000

Divisions	String[]	Yes	List of divisions for which to return. The query is restricted to only returning these divisions.
Return Result	SvStopTravel	No	An array of SvStopTravel.

getTravel

Description
This method returns travel for a specified time range. The method will return stop/travel segment where both the start and end datetime fall within the specified date time range.

Method Signature

Ordinal	DataType	Can be NULL?	Description
StartDate	SvDate	No	The starting date time for a requested range of results. The server queries for changes inclusive of this specified time (e.g., the query returns changes up to AND including the specified end time). The time date format must be provided as: yyyy-MM-dd HH:mm:ss.SSS e.g., to specify a start time of January 28th, 2004 at 1:50PM, the format would be 2004-01-28 13:50:00.000
EndDate	SvDate	No	Ending date for the range to changes. The server queries for changes changes. The server queries for changes exclusive of this specified time (e.g., the query returns changes up to BUT NOT including the specified end time). The time date format must be provided as: yyyy-MM-dd HH:mm:ss.SSS e.g., to specify a start time of

			January 28th, 2004 at 1:50PM, the format would be 2004-01-28 13:50:00.000
Return Result	SvStopTravel	No	An array of SvStopTravel.

getTravelByWorker

Description
This method returns travel for a specified time range for a specified worker. The method will return stop/travel segment where both the start and end datetime fall within the specified date time range.

Method Signature

Ordinal	DataType	Can be NULL?	Description
StartDate	SvDate	No	The starting date time for a requested range of results. The server queries for changes inclusive of this specified time (e.g., the query returns changes up to AND including the specified end time). The time date format must be provided as: yyyy-MM-dd HH:mm:ss.SSS e.g., to specify a start time of January 28th, 2004 at 1:50PM, the format would be 2004-01-28 13:50:00.000
EndDate	SvDate	No	Ending date for the range to changes. The server queries for changes changes. The server queries for changes exclusive of this specified time (e.g., the query returns changes up to BUT NOT including the specified end time). The time date format must be provided as: yyyy-MM-dd HH:mm:ss.SSS e.g., to specify a start time of January 28th, 2004 at

			1:50PM, the format would be 2004-01-28 13:50:00.000
WorkerName	String	No	The username for a valid user in application
Return Result	SvStopTravel	No	An array of SvStopTravel.

getTravelByDivision

Description
This method returns travel for a specified time range for specified divisions(Groups). The method will return stop/travel segment where both the start and end datetime fall within the specified date time range.

Method Signature

Ordinal	DataType	Can be NULL?	Description
StartDate	SvDate	No	The starting date time for a requested range of results. The server queries for changes inclusive of this specified time (e.g., the query returns changes up to AND including the specified end time). The time date format must be provided as: yyyy-MM-dd HH:mm:ss.SSS e.g., to specify a start time of January 28th, 2004 at 1:50PM, the format would be 2004-01-28 13:50:00.000
EndDate	SvDate	No	Ending date for the range to changes. The server queries for changes changes. The server queries for changes exclusive of this specified time (e.g., the query returns changes up to BUT NOT including the specified end time). The time date format must be provided as:

			yyyy-MM-dd HH:mm:ss.SSS e.g., to specify a start time of January 28th, 2004 at 1:50PM, the format would be 2004-01-28 13:50:00.000
Divisions	String[]	Yes	List of divisions for which to return. The query is restricted to only returning these divisions.
Return Result	SvStopTravel	No	An array of SvStopTravel.

submitGps

(SvGpsPosition[] points)

Description

The *submitGps* method provides the ability to send gps points to the Field Force Manager system. Up to a maximum of 1000 gps points can be submitted in a single call. The points can belong to different users but all users must belong to the same company. In order for the gps points to be accepted for a user, that user must be linked to a device. The caller of the *submitGps* service must also call the *submitUserAction* web service and login the user if the user wants the system to determine and create stop/travel segments for the submitted GPS pts.

Method Signature

Ordinal	DataType	Can be NULL?	Description
points	SvGpsPosition[]	No	Set of gps points that are to be added to Field Force Manager.
Return Result	SvResult	No	An array of SvResult result objects that indicate if the operation was successful. There is one SvResult object for each input SvGpsPosition object.

Field	DataType	Comments
Latitude	double	
Longitude	double	
positionCoordinateSystem	String	(RADIANS | DEGREES)
coverageStatus	int	0 = Valid GPS position attained -3 = Unable to get GPS (user probably indoors or out of GPS coverage) -1 = Timeout occurred attempting to get a GPS position -2 = Unable to connect to GPS subsystem on device -4 = GPS system has been restricted by the user on the device. 1 = GPS position not attainable 2 = GPS accuracy not attainable 4 = GPS accuracy data not available 5 = Battery too low to get GPS 6 = GPS chipset malfunction
heading	double	Heading associated with this position
headingCoordinateSystem	String	(RADIANS | DEGREES)
dateTime	SvDate	Timestamp of when this position was acquired.

Error Messages (on the SvResult object)

"The input array for gps points is null." – thrown if input array is null.

"Only 1000 points can be processed in a single request. Additional points were ignored." – Returned on each SvResult object for points over the max of 1000.

"A worker with the following username was not found: <workerName>" – Returned if the workerName in the SvGpsPosition object cannot be found.

"A device could not be found for the worker with username:: <workerName>" – Returned if the worker is not associated with a device in the Field Force Manager system.

"The worker name is required." – Returned if the workerName in the SvGpsPosition object is not valued.

"The timestamp when the gps point was collected must be supplied." – Returned if the timestamp in the SvGpsPosition object is not valued.

"The position coordinate must be either 'DEGREES' or 'RADIANS'" – Returned if the positionCoordinateSystem field of the SvGpsPosition object is not set to an acceptable value. If nothing is specified, Radians is used be default.

Message Service

sendMessage

(SvMessage message)

Description

The *sendMessage* method provides the ability to send Field Force Manager messages to one or multiple recipients.

Method Signature

Ordinal	DataType	Can be NULL?	Description
message	SvMessage	No	The message to send. See the documentation of SvMessage.
Return Result	SvResult	No	The result object. Any errors in creating and sending the message are indicated in the SvResult object.

Field	DataType	Comments
subject	String	The subject of the message. This is a required field.
body	SvDate	The message body.
creatorUsername	String	The username of the Field Force Manager worker who the message will be from. If the creatorUsername is not valued then an Field Force Manager system message will be sent.
recipientUsernames	String[]	An array of the intended recipients of the message.

Error Messages (on the SvResult object)

- *"The input SvMessage object cannot be null."* – Returned if the input object is null.
- *"There must be a message subject on the SvMessage object."* – Returned if the message subject is not valued.
- *"The creator with username <username> cannot be null."* – Returned if the input object is null.
- *"No recipients with the input usernames could be found."* – Returned if none of the usernames of recipients could be found.
- *"One or more message recipients could not be found. The message was sent to the other recipients. Missing recipients: <missing recipient list>"* – Returned if one or more recipients could not be found by username.

MessageService Error Codes

Error	Description of Error

code	
1	A null SvMessage object was input.
2	The subject string was empty.
3	The message creator does not exist.
4	No recipients were input or none of the recipients that were input exist.
5	One of more of the recipients input does not exist.
6	An error occurred persisting the message. The specific error message will be supplied in the SvResult message string.

Alert Service

getFiredAlerts

Description
This service method allows fired alert to be returned for a specified time range.

Method Signature

Ordinal	DataType	Can be NULL?	Description
StartDate	SvDate	No	The starting date time for a requested range of results. The server queries for changes inclusive of this specified time (e.g., the query returns changes up to AND including the specified end time). The time date format must be provided as: yyyy-MM-dd HH:mm:ss.SSS e.g., to specify a start time of January 28th, 2004 at 1:50PM, the format would be 2004-01-28 13:50:00.000
EndDate	SvDate	No	Ending date for the range to changes. The server queries for changes changes. The server queries for changes exclusive of this specified time (e.g., the query returns changes up to BUT NOT including the specified end time). The time date format must be provided as: yyyy-MM-dd HH:mm:ss.SSS e.g., to specify a start time of January 28th, 2004 at 1:50PM, the format would be 2004-01-28 13:50:00.000
Return Result	SvFiredAlert	Yes	An array of SvAlert

Field	DataType	Comments
Address	SvAddress	Address Object
Alertdescription	String	The text description of the alert
alertType	String	The Type of alert that fired
Coordinate	SvCoordinate	The coordinate object of where the alert fired
Criteriadescription	String	The rules of the alert that fired
Message	String	The text of the message that was recorded for the fired alert
Name	String	The name of the fired alert
Priority	String	The priority of the fired alert
receivedTime	SvDate	The time the item that triggered the alert was received at the server.
timecardName	String	
triggeredTime	SvDate	The datetime the item that triggered the alert actually happened at.
workerName	String	The name of the worker who triggered the alert.

getFiredAlertsByWorker

Description
This service method allows fired alert to be returned for a specified time range and a specified worker.
Method Signature

Ordinal	DataType	Can be NULL?	Description
StartDate	SvDate	No	The starting date time for a requested range of results. The server queries for changes inclusive of this specified time (e.g., the query returns changes up to AND including the specified end time). The time date format must be provided as: yyyy-MM-dd HH:mm:ss.SSS e.g., to specify a start time of January 28th, 2004 at 1:50PM, the format would be 2004-01-28 13:50:00.000

EndDate	SvDate	No	Ending date for the range to changes. The server queries for changes changes. The server queries for changes exclusive of this specified time (e.g., the query returns changes up to BUT NOT including the specified end time). The time date format must be provided as: yyyy-MM-dd HH:mm:ss.SSS e.g., to specify a start time of January 28th, 2004 at 1:50PM, the format would be 2004-01-28 13:50:00.000
WorkerName	String	No	The username for a valid user in application
Return Result	SvFiredAlert	Yes	An array of SvAlert

getFiredAlertsByDivision

Description
This service method allows fired alert to be returned for a specified time range and specified divisions(Groups)

Method Signature

Ordinal	DataType	Can be NULL?	Description
StartDate	SvDate	No	The starting date time for a requested range of results. The server queries for changes inclusive of this specified time (e.g., the query returns changes up to AND including the specified end time). The time date format must be provided as: yyyy-MM-dd HH:mm:ss.SSS e.g., to specify a start time of January 28th, 2004 at 1:50PM, the format would be 2004-01-28 13:50:00.000

EndDate	SvDate	No	Ending date for the range to changes. The server queries for changes changes. The server queries for changes exclusive of this specified time (e.g., the query returns changes up to BUT NOT including the specified end time). The time date format must be provided as: yyyy-MM-dd HH:mm:ss.SSS e.g., to specify a start time of January 28th, 2004 at 1:50PM, the format would be 2004-01-28 13:50:00.000
Divisions	String[]	Yes	List of divisions for which to return. The query is restricted to only returning these divisions.
Return Result	SvFiredAlert	Yes	An array of SvAlert

Location Service

createLocation

Description
This service method allows a landmark (Location) to be created.

Method Signature

Ordinal	DataType	Can be NULL?	Description
Name	String	No	The Name of the Location
landmarkType	String	No	The type of the Location
Location	svLocation	No	The object of the address
Referencenumber	String	No	The unique number used to update locations
Return Result	SvResult	No	

createOrUpdateLocation

Description
This service method allows a landmark (Location) to be created or updated.

Method Signature

Ordinal	DataType	Can be NULL?	Description
Name	String	No	The Name of the Location
landmarkType	String	No	The type of the Location
Location	svLocation	No	The object of the address
Referencenumber	String	No	The unique number used to update locations
Return Result	SvResult	No	

updateLocation

Description
This service method allows a landmark (Location) to be updated.

Method Signature

Ordinal	DataType	Can be NULL?	Description
Name	String	Yes	The Name of the Location
landmarkType	String	Yes	The type of the Location
Location	svLocation	Yes	The object of the address
Referencenumber	String	No	The unique number used to update locations
Return Result	SvResult	No	

getLocationByLocationType

Description
This service method returns all landmarks (Locations) for specified landmark types.

Method Signature

Ordinal	DataType	Can be NULL?	Description
landmarkType	String	No	The type of the Location
Return Result	SvLandmark	No	

deleteLocation

Description
This service deletes the Landmark (Location).

Method Signature

Ordinal	DataType	Can be NULL?	Description
referenceNumber	String	Yes	Deletes a location with the reference number, If the location is found then returns true as the result, If the location is not found then returns false with the message as Landmark reference number not specified.

GetGpsByWorker [GpsService]

The getGpsByWorker(String, SvDate, SvDate) service method provides the ability to retrieve GPS information for a specified worker over a specified time range. The worker must exist in Field Force Manager, otherwise an exception is thrown.

The intended usage of this service call is to provide a way to periodically synchronize an external system's data with Field Force Manager. The external system is expected to call this service incrementally using adjacent time ranges such as:

Call 1: 2004-01-28 13:50:00.0000 to 2004-01-28
14:52:00.000 Call 2: 2004-01-28 14:52:00.0000 to 2004-
01-28 15:49:07.000 Call 3: 2004-01-28 15:49:07.0000 to
2004-01-28 16:55:43.000

In this example, the external system is querying at an intervals of 1 hour. The external system must keep track of the last call's endTime and should use the last endTime as the startTime for the next call. The results returned are inclusive on the startTime and exclusive on the endTime to prevent the returned results from overlapping between two adjacent calls.

The full signature is described:

Ordinal	DataType	Can be NULL?	Description
WorkerName	String	No	The username for a valid user in application.

StartDate	SvDate	no	Starting date for the range to check for changes. The server queries for changes inclusive of this specified time (e.g., the query returns changes up to AND including the specified end time). The time date format must be provided as: yyyy-MM-dd HH:mm:ss.SSS e.g., to specify a start time of January 28th , 2004 at 1:50PM, the format would be 2004-01-28 13:50:00.000
EndDate	SvDate	No	Ending date for the range to check for changes. The server queries for changes exclusive of this specified time (e.g., the query returns changes up to BUT NOT including the specified end time). The time date format must be provided as: yyyy-MM-dd HH:mm:ss.SSS e.g., to specify a start time of January 28th , 2004 at 1:50PM, the format would be 2004-01-28 13:50:00.000
Return Result	SvGpsPosition[]	No	An array of SvGpsPosition instances. See documentation on SvGpsPosition for more details.

Expected behaviors

- The worker specified by the WorkerName parameter must exist, otherwise an exception is thrown.
- GPS positions are returned with a coverage status code. Valid GPS positions have a value of 0 for the status code. Invalid GPS position will have a non-0 status code value. The status code values indicate why the GPS acquisition failed (e.g., user indoors and cannot get GPS, battery too low, user turned off GPS permissions, etc.)
- If the status code value for a position is non-0 (invalid), the latitude and longitude will be 0.
- If the endDate is equal to or before the startData, an exception is thrown.
- If either the start or end timedate parameters are null, an exception is thrown.
- If no GPS changes are detected for the worker, an empty array is returned (i.e., Field Force Manager received no GPS information for the specified time range).

CompanyAdmin Service

SvWorker

Ordinal	DataType	Can be Null?	Descriptions
firstName	String	Yes	The first name of the worker. *Either the first and last name must be populated or the preferred name must be populated.*
middleName	String	Yes	The middle name of the worker
lastName	String	Yes	The last name of the worker. *Either the first and last name must be populated or the preferred name must be populated.*
preferredName	String	Yes	The preferred name of the worker. *Either the first and last name must be populated or the preferred name must be populated.*
userName	String	No	The username of the worker. *Must be unique within the company. Required for both createWorker and updateWorker.*
divisionName	String	No	The division of the worker. *Required for createWorker*
securityRoleName	String	No	The name of the security role of the worker. Can be either a custom security role or one of the following: Mobile Worker, Operations, Company Administrator, Super User, WebService. *Required for createWorker.*
timezone	String	No	The time zone of the worker. Must be one of the following:

			US/Samoa, US/Aleutian, US/Hawaii, US/Alaska, US/Pacific, US/Arizona, US/Mountain, US/Central, US/East-Indiana, US/Eastern, US/Indiana-Starke, US/Michigan. *Defaults to the company's time zone if the time zone is not specified.*
address	SvAddress	Yes	The address of the worker. See definition of SvAddress below.
pin	String	No	The pin for a mobile worker. Must be numeric and between 4 and 10 characters and must be unique. *Will be automatically generated if not set.*
password	String	No	The password for a mission control or web service worker. *Required for createWorker*
mobilephoneNumber	String	Yes	The worker's mobile phone number
otherPhoneNumber	String	Yes	Alternate phone number.
faxNumber	String	Yes	The worker's fax number.
emailAddress	String	Yes	The worker's e-mail address
smsAddress	String	Yes	The worker's SMS address
notificationMechanism	String	Yes	How the worker prefers to be notified with information. This setting is used, for example, by the Alerts Engine to notify the recipient of an alert. Must be one of the following: email, sms, Field Force ManagerMessage.
notifyOfSystemMaintenance	Boolean	Yes	Registers a worker to be notified of system maintenance via the preferred notification mechanism.

sendWhatsNewMail	Boolean	Yes	Registers a worker to receive “what’s new” information.
IVR Auth Number	String	Yes	The 10 digit phone number by which the PowerTalk system authenticates IVR callers.
Return Result	SvResult	No	Returns a SvResult object that indicates the success or failure of the method call.

SvResult

Field	DataType	Comments
errorCode	Integer	The error code. 0 if no error
errorMessage	String	The error message
goodResult	Boolean	True if successful, False otherwise

SvAddress

Field	DataType	Comments
streetAddress	String	The address line(s)
apt	String	The suite or apartment
city	String	The city
state	String	The state
zip	String	The zip code
country	String	The country

Error Messages

Error Code	Error Message
1	The worker does not exist in the database (only set for updateWorker)
2	Cannot update worker. Unexpected error occurred.
3	Cannot delete worker. Unexpected error occurred.
4	Invalid PIN specified. Must be numeric, must be between 4 and 10 characters long, and must be unique.
5	Password field must be non-null and not empty.
6	Either the first and last name must be populated or the preferred name must be populated.
7	The input timezone is not valid.
8	securityGroupName is required *or* Invalid security group name
9	Username must be populated.
10	Username must be unique within the company.

11	Cannot autogenerate pin.
12	Worker type code not valid.
13	Division name was empty or division not found.
14	Ivr authentication number must only contain numeric values *or* Ivr authentication number already exists for another worker.
15	Attempt to delete worker with assigned active jobs.
16	Workers cannot delete themselves.

GetWorkers

[CompanyAdminService]

Description

The getWorkers() service method provides the ability to query for all workers in a company.

Method Signature

Ordinal	DataType	Can be NULL?	Description
Return Result	SvWorker[]	No	An array of SvWorker instances. See documentation on SvWorker for more details.

Expected behaviors

- All workers (except deleted) are returned by this service call.
- Each SvWorker has a boolean active flag that indicates if the worker/user is active in Field Force Manager. A worker/user must be active to log in.
- Each SvWorker is assigned to a security group. The caller needs to inspect these values in order to determine the role of the worker. For example, operations users (Mission Control) cannot be assigned jobs, etc. To assign jobs to workers, the SvWorker's security group must indicate they are a mobile worker.

getWorkerByName

(String workerName)

Description

This web service allows the retrieval of a worker by the worker's username. It is assumed that the worker name that is input is unique within the company.

Method Signature

Ordinal	DataType	Can be NULL?	Description

workerName	String	No	The username of the worker to retrieve.
Return Result	SvWorker	No	A fully populated SvWorker object if the worker is found. Otherwise null is returned.

Validation Errors
"Worker name must be supplied." – thrown if the worker name is blank or null.

getWorkersByName

(String[] workerNameArray)

Description
This web service allows the retrieval of a set of workers by username. It is assumed that the worker names that are input are unique within the company. Note that the size of the returned array may be different than the size of the input array if one or more workers are not found.

Method Signature

Ordinal	DataType	Can be NULL?	Description
workerNameArray	String[]	No	An array of usernames listing the workers to retrieve.
Return Result	SvWorker	No	For each worker that is found, a fully populated SvWorker object will be returned in the corresponding array element. If no workers are found, an empty array is returned.

Validation Errors
"The worker name array cannot be null." – thrown if the array is null or empty.
"Worker name must be supplied." – thrown if an array element is blank or null.

createWorker

Description
SvResult createWorker(SvWorker worker)
The createWorker web service method will create a new worker in Field Force Manager. See the documentation below for details on the fields that can be populated on the SvWorker object.

Method Signature

Ordinal	DataType	Can be NULL?	Description
Worker	SvWorker	No	An SvWorker instance describing the details of how to create/update the worker.
Return Result	SvResult	No	

updateWorker

Description
SvResult updateWorker(SvWorker workers)
The updateWorker web service method updates an existing worker. If the worker does not exist in Field Force Manager, an error is returned. Only fields specified in the SvWorker object will be updated. All other fields will remain at their previous values.

Method Signature

Ordinal	DataType	Can be NULL?	Description
Worker	SvWorker	No	An SvWorker instance describing the details of how to create/update the worker.
Return Result	SvResult	No	

createOrUpdateWorker

Description
SvResult createOrUpdateWorker(SvWorker workers)
The createOrUpdateWorker web service method will create a new worker if the worker doesn't already exist. In this case, it will be subject to the same validation rules as createWorker. If the worker is determined to already exist, that worker will be updated as in the updateWorker method.

Method Signature

Ordinal	DataType	Can be NULL?	Description
Worker	SvWorker	No	An SvWorker instance describing the details of how to create the company.
Return Result	SvResult	No	

deleteWorker

Description
SvResult deleteWorker(String username)
The deleteWorker webservice method will delete an existing worker. The worker must have no active jobs assigned to them.

Method Signature

Ordinal	DataType	Can be NULL?	Description
Username	String	No	The username of the user to be deleted.
Return Result	SvResult	No	

SvDevice

Field	DataType	Comments
deviceType	String	The type of device. Must be valid selection for your Field Force Manager package. *Required for createDevice.*
description	String	Description. *Required for createDevice.*
serialNumber	String	Serial number of the device. *AutoGenerated*
softwareVersion	String	String representing the current Field Force Manager software version on the device. *Read only.*
lastIPAddress	String	Last known IP address of the device. *Read only.*
createdDateTime	SvDate	Date device was created. *Read only.*
activatedDateTime	SvDate	Activation date/time of the device. *Read only.*
currentlyLinkedTo	String	workerName of the worker currently linked to the device. *Read only*
deviceIdentifier	String	The device identifier assigned to the device. Could be a phone number, IP address, etc as appropriate. Must be unique to system. *Required for createDevice.*

SvResult

Field	DataType	Comments
errorCode	Integer	The error code. 0 if no error
errorMessage	String	The error message
goodResult	Boolean	True if successful, False otherwise

SvAddress

Field	DataType	Comments
streetAddress	String	The address line(s)
apt	String	The suite or apartment
city	String	The city
state	String	The state
zip	String	The zip code
country	String	The country

Error Messages

Code	Message
	Invalid device type. Type specified does not exist in the system. description is required.

getDevices

SvDevice[] getDevices()

Description

The getDevices method will retrieve a list of all devices in the system for a company.

Method Signature

Ordinal	DataType	Can be NULL?	Description
Worker	SvWorker	No	An SvWorker instance describing the details of how to create/update the worker.
Return Result	SvDevice	No	

getDevice

Description
SvDevice getDevice(String deviceIdentification)
The getDevice web service method will retrieve information about a Device by its phone number.

Method Signature

Ordinal	DataType	Can be NULL?	Description
Return Result	SvDevice	No	

createDevice

Description
SvResult createDevice(SvDevice device)
The createDevice web service method will create a new device in Field Force Manager. See the documentation below for details on the fields that can be populated on the SvDevice object.

Method Signature

Ordinal	DataType	Can be NULL?	Description
Device	SvDevice	No	Populate the required device fields.
Return Result	SvResult	No	

updateDevice

Description
SvResult updateDevice(SvDevice devices)
The updateDevice web service method updates an existing device. If the device does not exist in Field Force Manager, an error is returned. Only fields specified in the SvDevice object will be updated. All other fields will remain at their previous values.

Method Signature

Ordinal	DataType	Can be NULL?	Description
Device	SvDevice	No	Populate the required device fields.
Return Result	SvResult	No	

createOrUpdateDevice

Description
SvResult createOrUpdateDevice(SvDevice devices)
The createOrUpdateDevice web service method will create a new device if the device doesn't already exist. In this case, it will be subject to the same validation rules as createDevice. If the device is determined to already exist, that device will be updated as in the updateDevice method.

Method Signature

Ordinal	DataType	Can be NULL?	Description
Device	SvDevice	No	Populate the required device fields.
Return Result	SvResult	No	

deleteDevice

Description
SvResult deleteDevice(String deviceIdentification)
The deleteDevice webservice method will delete an existing device. The device must have no active jobs assigned to it.

Method Signature

Ordinal	DataType	Can be NULL?	Description
Device	deviceIdentifier	No	The phone number or IP address of the device.
Return Result	SvResult	No	

linkDeviceToWorker

Description
SvResult linkDeviceToWorker(String deviceIdentifier, String workerName) [CompanyAdminService]
The linkDeviceToWorker web service method will create a new device in Field Force Manager. The specified username will be linked to the device represented by the specified phone number.
If the device has previously been linked to a worker, linkDeviceToWorker will override the current setting and reassign the device to the worker specified.
Attempt to link a device or user from a company that is not within the security context of the WS user should result in an error.

Method Signature

Ordinal	DataType	Can be NULL?	Description
deviceIdentifier	String	No	The device identifier (may be a phone number, IP address, etc. as appropriate) of the device to be linked. This device must already exist in the system.
workerName	String	No	The workerName of the mobile worker to be linked. The user must already exist in the system, and must have a valid Mobile Worker security role.
Return Result	SvResult	No	Returns a SvResult object that indicates the success or failure of the method call.

getDivision

Description
This service returns all Groups/Divisions available to the calling user.

Method Signature

Ordinal	DataType	Can be NULL?	Description
Return Result	SvDivision[]	No	Returns an array of SvDivision instances based on security role of the web service user . If no divisions are found, an empty array is returned. Each SvDivision instance holds the name of a division.

Interface Objects

SvResult

Field	DataType	Comments
errorCode	int	The error code. 0 if no error
errorMessage	String	The error message
goodResult	String	Success Message

SvJobServiceResult (subclass of SvResult)

Field	DataType	Comments
errorCode	int	The error code. 0 if no error
errorMessage	String	The error message
jobReferenceNumber	String	The reference number of the job

SvJobActionUpdate

Field	DataType	Comments
actions	SvJobAction[]	The updated actions
svJob	SvJob	The job associated with the actions

SvUserAction

Field	DataType	Comments
timecardName	String	The timecard name. Will be null if this action is not a timecard action. Timecard actions include Login, Logout, Start Shift, Start Break, End Break, End Shift and Ad-Hoc Form.
executionDateTime	SvDate	Timestamp of when the user action was performed. Note that this is the timestamp logged by the device. Due to network latency or cell coverage issues, the service may not actually receive the user action until much later, so this value may be before the date range of the service query.
workerName	String	The name of the worker that completed the action
location	SvLocation	Where the action was performed. May be null
form	SvForm	Form data collected for the action. May be null

SvMessage

Field	DataType	Comments
subject	String	The subject of the message. This is a required field.
body	SvDate	The message body.
creatorUsername	String	The username of the Field Force Manager worker who the message will be from. If the creatorUsername is not valued then an Field Force Manager system message will be sent.
recipientUsernames	String[]	An array of the intended recipients of the message.

SvTimesheet

Field	DataType	Comments
timecardName	String	The shift name. Is one of the following: On Duty, On Break, Off Duty, Logged In
workerName	String	The name of the worker who's timesheet it is.
startDate	SvDate	Timestamp of when the shift was started
endDate	SvDate	Timestamp of when the shift was ended. Can be null if the shift has not ended.

SvJobAction

Field	DataType	Comments
name	String	The name of the job action
dateTime	SvDate	Timestamp of when the job action was performed
workerName	String	The name of the worker that completed the action
location	SvLocation	Where the action was performed. May be null
form	SvForm	Form data collected with the job action. May be null

SvForm

Field	DataType	Comments
formName	String	The form name
formData[]	SvFormField[]	The list of form fields

SvFormField

Field	DataType	Comments

fieldName	String	The name of the field
fieldValue	String	The value of the field as completed by the mobile worker

SvJob

Field	DataType	Comments
referenceNumber	String	Reference number of the work item. This must be unique in Field Force Manager (even among deleted work items). Reference number is used to link a work item existing in Field Force Manager to an external system. This field cannot be null.
description	SvString	Description for the work item (work to be done). This is commonly referred to as the job name. This field displays on the device in lists. This field can be null. The reference number is shown on the device if this field is null.
workerName	SvString	Worker assigned (or to be assigned) to this work item.
divisionName	SvString	Division assignment for this job.
workItemTypeName	String	WorkItemTypeName for this job. Cannot be null. WorkItemType specified must exist in Field Force Manager and be linked to the company.
priority	SvString	(Emergency | High | Medium | Low)
status	SvString	Current status string of the job (Assigned | Unassigned | Retrieved | Active | Expired | Terminated)
scheduledStartTime	SvDate	Scheduled start date and time for the work item. Can be null. Must be a UTC date.
scheduledEndTime	SvDate	Scheduled end date and time for the work item. Can be null. Must be a UTC date.
actualStartTime	SvDate	Actual start date and time for the work item. Will be null until the work item is completed. Must be a UTC date.
actualEndTime	SvDate	Actual end date and time for the work item. Will be null until the work item is completed. Must be a UTC date.
location	SvLocation	Location of the work item.
attributes	SvJobAttribute[ ]	Array of attribute data for the job.
actions	SvJobAction[]	Array of actions for the job.

SvCompany

Field	DataType	Comments
name	String	Name of the company
companyId	String	Identifier that uniquely identifies the company in Field Force Manager. This is the id required to log into the website.
companyIdentifier	String	GUID that uniquely identifies the company in Field Force Manager. This identifier can be used programmatically but is not considered usable for humans.
divisions	SvDivision[]	Array of SvDivision
packageName	String	Name of the package supported by this company for licensing purposes.
adminWorker	SvWorker	Administrative worker (of type SvWorker) that is passed in during calls to createCompany. Otherwise this parameter should be null.
location	SvLocation	SvLocation instance describing the location of this company. This parameter can be null
companyUrl	String	URL for the company. This parameter can be null.

SvDate

Field	DataType	Comments
dateString	String	String representation of a date. This type is used to provide a date using an underlying string type. This is done since some clients cannot pass dates as null values. The format must be: yyyy-MM-dd HH:mm:ss.SSS e.g., February 22, 2004 at 2:30PM equates to 2004-02-22 14:10:00.000

SvDivision

Field	DataType	Comments
name	String	Name of the division
Location	String	SvLocation of the division (can be null)

SvGpsPosition

Field	DataType	Comments
Latitude	double	
Longitude	double	
positionCoordinateSystem	String	(RADIANS | DEGREES)
coverageStatus	int	0 = Valid GPS position attained -3 =

		Unable to get GPS (user probably indoors or out of GPS coverage) -1 = Timeout occurred attempting to get a GPS position -2 = Unable to connect to GPS subsystem on device -4 = GPS system has been restricted by the user on the device. 1 = GPS position not attainable 2 = GPS accuracy not attainable 4 = GPS accuracy data not available 5 = Battery too low to get GPS 6 = GPS chipset malfunction
heading	double	Heading associated with this position
headingCoordinateSystem	String	(RADIANS | DEGREES)
dateTime	SvDate	Timestamp of when this position was acquired.

SvLocation

Field	DataType	Comments
address	SvAddress	Address corresponding to the GPS position. This may be null
position	SvGpsPosition	Position corresponding to the address. This may be null

SvAddress

Field	DataType	Comments
streetAddress	String	Street address
apt	String	Suite number
city	String	City
state	String	State
zip	String	Postal code

SvWorker

Field	DataType	Comments
username	String	Login name for the user
password	String	Password (used only for created an admin user in createCompany)
firstName	String	Worker first name
lastName	String	Worker last name
preferredName	String	Worker preferred name
address	SvAddress	Address for the worker
phoneNumber	String	Phone number for the worker
mobileNumber	String	Mobile phone number for the worker

faxNumber	String	FAX number for the worker
emailAddr	String	Email address for the worker
divisionName	String	Name of the division in which the worker currently belongs
activeStatus	Boolean	Is the user active in Field Force Manager (only active users can log in)
securityGroupName	String	Security group to which the user currently belongs (Operations | Mobile Worker)

svLandmark

Field	DataType	Comments
Name	String	The Name of the Location
landmarkType	String	The type of the Location
Location	svLocation	The object of the address
Referencenumber	String	The unique number used to update locations

SvWorkzone

Field	DataType	Comments
circleCenterCoordinate	SvCoordinate	GPS Object
circleRadiusMiles	Double	Size of circular workzone
workzoneType	String	

SvCoordinate

Field	DataType	Comments
latitude	Double	The latitude decimal degrees of object
longitude	Double	The longitude decimal degrees of object

SvFiredAlert

Field	DataType	Comments
Address	SvAddress	Address Object
Alertdescription	String	The text description of the alert
alertType	String	The Type of alert that fired
Coordinate	SvCoordinate	The coordinate object of where the alert fired
Criteriadescription	String	The rules of the alert that fired
Message	String	The text of the message that was recorded for the fired alert
Name	String	The name of the fired alert
Priority	String	The priority of the fired alert
receivedTime	SvDate	The time the item that triggered the alert was received at the server.
timecardName	String	

triggeredTime	SvDate	The datetime the item that triggered the alert actually happened at.
workerName	String	The name of the worker who triggered the alert.

SvStopTravel

Field	DataType	Comments
address	SvAddress	Address Object
coordinate	SvCoordinate	Coordinate Object
distance	double	The distance traveled in the segment. The distance is only valid for non-stopped segments
endTime	SvDate	The date time the stop or travel segment began
jobReferenceNumber	String	The reference number of a job if the stop was determined to have occurred at a job
landmarkName	String	The name of the landmark if the stop was determined to have occurred at a location
startTime	SvDate	The date time the stop or travel segment started
stoppedFlag	Boolean	Whether or not the segment was a stop. If true the segment is a stop, if false the segment is a travel segment.
timecardName	String	The timecard status for a segment. The possible statuses are Logged Off, Logged In, On Duty, On Break
workerName	String	The username of the worker who performed the stop or travel segment.