Data Element

Name SCH-ActivationID

Identifier schdd 1

Purpose A unique number assigned to an activation event.

Usage

Definition IDENL

Data Element

Name SCH-ActivationType

Identifier schdd 2

Purpose The type of activation event.

Usage

Definition

```
ENUMERATED
{
annTrigger(1),  -- announcement trigger
routeAdhOverride(2),  -- route adherence override
signChange(3),  -- sign change
msgTrigger(4),  -- driver message trigger/paddle (relief point)
fareZone (5),  -- fare zone
radioZone (6),  -- radio zone
reliefTrigger (7), -- relief trigger
beginLayover (8),  -- Begin Layover
endLayover (9),  -- End Layover
beginTrip (10),  -- Begin Trip
endTrip (11),  -- End Trip
beginDeadhead (12),  -- Begin Deadhead
endDeadhead (13),  -- End Deadhead
routeAdhOverrideEnd (14)
    -- 15-149 reserved
    -- 150-255 local use
…  -- # LOCAL_CONTENT
}
```

Data Element

Name SCH-ActivationTypeDescription

Identifier schdd 3

Purpose Description of an unassigned activation type (SchActivationType)

Usage

Definition FOOTNOTE

Data Element

Name	SCH-AnnouncementDuration
Identifier	schdd 4
Purpose	The length of time of an automated audio or visual (via dynamic message sign) announcement.
Usage	The units are in seconds.
Definition	DURTIME

Data Element

Name SCH-AnnouncementID

Identifier schdd 5

Purpose A unique number assigned to an announcement within a transit agency.

Usage

Definition IDENS

Data Element

Name SCH-AnnouncementLocationID

Identifier schdd 6

Purpose A unique number assigned to an announcement location within a transit agency.

Usage

Definition UBYTE

Data Element

Name SCH-BlockDesignator

Identifier schdd 7

Purpose A unique alpha-numeric designator (identifier) of a vehicle assignment.

Usage

Definition NAME8

Data Element

Name SCH-BlockGroupName

Identifier schdd 8

Purpose The name given to a grouping of vehicle assignments.

Usage

Definition NAME30

Data Element

Name SCH-BlockID

Identifier schdd 9

Purpose A unique number assigned to a vehicle assignment. Typically, the assignment is given within a day type that is used to associate a sequence of trips to a transit vehicle.

Usage

Definition IDENL

Data Element

Name SCH-BlockName

Identifier schdd 10

Purpose The name of a vehicle assignment. For legacy systems the block name often identifies the major route served by the block and the pull out sequence.

Usage

Definition NAME8

Data Element

Name SCH-DayType

Identifier schdd 11

Purpose A type of day characterized by one or more properties that affect public transport operation.

Usage

Definition

```
ENUMERATED
{
  sunday (1),   -- Sunday
  monday (2),   -- Monday
  tuesday (3),   -- Tuesday
  wednesday (4),   -- Wednesday
  thursday (5),   -- Thursday
  friday (6),   -- Friday
  saturday (7),   -- Saturday
  holiday (8),   -- Holiday
  weekday (9),   -- Weekday
  weekend (10),   -- Weekend
  weekdaySchoolClosed (11) -- Weekday, school closed
     -- 12-149 reserved
     -- 150-255 local use
…  -- # LOCAL_CONTENT
}
```

Data Element

Name SCH-DayTypeDescription

Identifier schdd 12

Purpose The description of a user-defined SCH_DayType, type of day that affects transit service.

Usage

Definition FOOTNOTE

Data Element

Name SCH-NoteDesignator

Identifier schdd 13

Purpose A unique alpha-numeric designator for a SchNoteMsg

Usage

Definition NAME8

Data Element

Name SCH-NoteID

Identifier schdd 14

Purpose A unique identifier for a note.

Usage

Definition IDENS

Data Element

Name SCH-NoteMsg

Identifier schdd 15

Purpose A remark or comment related to a message or transit object.

Usage

Definition FOOTNOTE

Data Element

Name SCH-OperatingTimeType

Identifier schdd 16

Purpose A numeric value indicating the type of operating time.

Usage

Definition

```
ENUMERATED
{
 deadhead(1),   -- Deadhead Time
 dwell(2),   -- Dwell Time
 layover(3),  -- Layover Time
makeUp (4),  -- Make Up Time
overtime (5),  -- Overtime
pullIn (6),  -- PullIn Time
pullOut (7),  -- PullOut Time
spread (8),  -- Spread Time
travel (9),  -- Travel Time
turnInAllowance (10),  -- TurnInAllowance
report (11),  -- Report Time
platform (12),  -- Platform Time
break (13),  -- Break Time
mealBreak (14)  -- Meal Break Time
   -- 15-149 reserved
   -- 150-255 local use
 …  -- # LOCAL_CONTENT
}
```

Data Element

Name SCH-OperatorDesignator

Identifier schdd 17

Purpose A unique alpha-numeric designator of a PT vehicle operator.

Usage

Definition NAME8

Data Element

Name SCH-PatternDesignator

Identifier schdd 19

Purpose A unique alpha-numeric designator (identifier) of a pattern.

Usage

Definition NAME8

Data Element

Name SCH-PatternID

Identifier schdd 20

Purpose A unique number assigned to a pattern.

Usage

Definition IDENS

Data Element

Name SCH-PatternName

Identifier schdd 21

Purpose A name given to a pattern.

Usage

Definition NAME20

Data Element

Name SCH-PatternSegmentID

Identifier schdd 100

Purpose Provide a unique identifier for a pattern segment.

Usage

Definition IDENL

Data Element

Name	SCH-PullInTime
Identifier	schdd 23
Purpose	The time at which a transit vehicle arrives at its storage facility (vehicle base) at the end of a vehicle assignment.
Usage	Units are in seconds.
Definition	SCHTIME

Data Element

Name	SCH-PullOutTime
Identifier	schdd 24
Purpose	The time at which a vehicle pulls out of its storage facility (vehicle base) at the start of a vehicle assignment.
Usage	Units are in seconds.
Definition	SCHTIME

Data Element

Name SCH-RosterDesignator

Identifier schdd 26

Purpose A unique alpha-numeric designator (identifier) of a roster.

Usage

Definition NAME8

Data Element

Name SCH-RosterID

Identifier schdd 27

Purpose A unique number assigned to a roster.

Usage

Definition IDENS

Data Element

Name SCH-RouteDesignator

Identifier schdd 28

Purpose A unique alpha-numeric designator (identifier) of a route.

Usage

Definition NAME8

Data Element

Name SCH-RouteDirectionID

Identifier schdd 29

Purpose A unique number assigned to the direction of a route.

Usage

Definition IDENS

Data Element

Name SCH-RouteDirectionName

Identifier schdd 30

Purpose A name that describes the direction of a route.

Usage

Definition

```
ENUMERATED
{
  north (1),   -- North
  south (2),   -- South
  east (3),   -- East
  west(4),   -- West
   sw  (5),   -- Southwest
  se  (6),   -- Southeast
  nw  (7),   -- Northwest
 ne  (8),   -- Northeast
  in  (9),   -- Inbound
  out (10),   -- Outbound
  circ (11),   -- Circular
  dest (12),   -- Destination
  clockwise(13),  -- Clockwise
 counterClock (14), -- Counter-Clockwise
 name (15)   -- defined by name of route
     -- 16-149 reserved
     -- 150-255 local use
…  -- # LOCAL_CONTENT
}
```

Data Element

Name SCH-RouteID

Identifier schdd 31

Purpose A unique number assigned to a route.

Usage

Definition IDENS

Data Element

Name SCH-RouteName

Identifier schdd 32

Purpose A name given to a route.

Usage

Definition NAME30

Data Element

Name SCH-RunDesignator

Identifier schdd 33

Purpose A unique alpha-numeric designator (identifier) of a run.

Usage

Definition NAME8

Data Element

Name SCH-RunID

Identifier schdd 34

Purpose A unique number assigned to a run.

Usage

Definition IDENS

Data Element

Name	SCH-RunningSpeed
Identifier	schdd 35
Purpose	The average speed maintained between two points.
Usage	The valid range is 0 - 500 kph. The speed is measured in kilometers per hour (kph).
Definition	USHORT

Data Element

Name	SCH-RunningTimeActual
Identifier	schdd 36
Purpose	The actual time for a transit vehicle to travel between two points.
Usage	The units are in seconds.
Definition	DURTIME

Data Element

Name SCH-RunningTimePeriodName

Identifier schdd 37

Purpose The name given to a running time period.

Usage

Definition NAME30

Data Element

Name SCH-RunningTimeSched

Identifier schdd 38

Purpose A time assigned to the movement of a PTV, or a PTV's dwell at a point.

Usage

Definition DURTIME

Data Element

Name SCH-RunType

Identifier schdd 39

Purpose Type of operator assignment.

Usage

Definition

```
ENUMERATED
{
  amStraigtht (1),  -- AM Straight,
  midStraight (2),  -- Midday Straight,
  pmStraight (3),  -- PM Straight,
  straight (4),  -- Straight,
  cleanup (5),  -- Cleanup,
  owl (6),   -- Owl,
  regular (7),  -- Regular,
 relief (8),   -- Relief,
  split (9),   -- Split,
  threePiece (10),  -- Three Piece (including swing),
  tripper (11),  -- Tripper,
  twoPiece(12)  -- Two Piece (including swing)
     -- 13-149 reserved
     -- 150-255 local use
…  -- # LOCAL_CONTENT
}
```

Data Element

Name SCH-RunTypeDescription

Identifier schdd 40

Purpose A description of type of run.

Usage

Definition FOOTNOTE

Data Element

Name SCH-ServiceType

Identifier schdd 41

Purpose Type of transit service provided.

Usage

Definition

```
ENUMERATED
{
 regular (1),   -- Regular,
 express (2),  -- Express,
 circular(3),  -- Circular,
radial  (4),  -- Radial,
feeder  (5),  -- Feeder,
jitney  (6),  -- Jitney,
limited (7),  -- Limited,
nonRevenue (8),  -- Non-revenue,
unknown (9),  -- Unknown,
charter (10),  -- Charter Service,
school (11),  -- School Service,
special (12),  -- Special Service,
operatorTraining (13), -- Operator Training,
maintenance (14), -- Maintenance Service,
noService (15),  -- No Service,
standBy (16),  -- Stand-by,
extra (17)  -- Extra,
   -- 18-149 reserved
   -- 150-255 local use
…  -- # LOCAL_CONTENT
}
```

Data Element

Name SCH-ServiceTypeDescription

Identifier schdd 42

Purpose Description of the service type for SchServiceType.

Usage

Definition FOOTNOTE

Data Element

Name SCH-SignCodeID

Identifier schdd 43

Purpose A unique identifier of a sign code for each unique announcement within an agency, e.g. interior, exterior, etc.

Usage

Definition IDENS

Data Element

Name SCH-SignLocationID

Identifier schdd 44

Purpose The functional address for the sign location where a message is to appear. This may refer to an in-vehicle sign, station sign, or other visualization media.

Usage

Definition UBYTE

Data Element

Name SCH-StoppointLength

Identifier schdd 46

Purpose The linear length along a curb or parking area at a stop point.

Usage Units are meters.

Definition USHORT

Data Element

Name	SCH-StoppointTime
Identifier	schdd 101
Purpose	Secify the scheduled time for a PTV to service a stoppoint.
Usage	Transit agencies normally do not assign a stop point time for each stop, this data element is primarily intended for use in specifying transfers.
Definition	SCHTIME

Data Element

Name	SCH-TimeBegin
Identifier	schdd 48
Purpose	The beginning time for a time period.
Usage	IEEE/ASTM SI 10-1997 time (second) The units are in seconds.
Definition	SCHTIME

Data Element

Name	SCH-TimeEnd
Identifier	schdd 49
Purpose	The ending time for a time period.
Usage	IEEE/ASTM SI10-1997 time (second) The units are in seconds.
Definition	SCHTIME

Data Element

Name	SCH-TimepointDesignator
Identifier	schdd 50
Purpose	A unique alpha-numeric designator (identifier) of a time point.
Usage	UCS
Definition	NAME8

Data Element

Name SCH-TimepointID

Identifier schdd 51

Purpose A unique number assigned to a time point.

Usage

Definition IDENS

Data Element

Name SCH-TimepointIntervalDesignator

Identifier schdd 52

Purpose A unique alpha-numeric designator (identifier) of a time point interval.

Usage

Definition NAME8

Data Element

Name SCH-TimepointIntervalID

Identifier schdd 53

Purpose A unique number assigned to a time point interval.

Usage

Definition IDENS

Data Element

Name SCH-TimepointName

Identifier schdd 54

Purpose The name of a time point.

Usage

Definition NAME40

Data Element

Name SCH-TimePtNameShort

Identifier schdd 55

Purpose A short name associated with a time point. This 4-character name supports existing legacy systems that rely on 4 characters to identify their time points.

Usage

Definition NAME4

Data Element

Name SCH-TimetableVersionID

Identifier schdd 56

Purpose A unique number assigned to a time table version.

Usage

Definition IDENS

Data Element

Name SCH-TimetableVersionName

Identifier schdd 57

Purpose A name given to a time table version, e.g., summer.

Usage

Definition NAME8

Data Element

Name SCH-TransferID

Identifier schdd 102

Purpose Provide a unique identifier for a scheduled transfer opportunity.

Usage

Definition IDENL

Data Element

Name SCH-TripDesignator

Identifier schdd 58

Purpose A unique alpha-numeric designator (identifier) of a trip.

Usage

Definition NAME8

Data Element

Name SCH-TripID

Identifier schdd 59

Purpose A unique number assigned to a trip.

Usage

Definition IDENS

Data Element

Name SCH-TripTimepointDescription

Identifier schdd 60

Purpose The description of a type of a user defined SCH-TripTimePtAttribute code (local use code).

Usage

Definition FOOTNOTE

Data Element

Name SCH-TripTimePtAttribute

Identifier schdd 61

Purpose An attribute of a time point in the context of a trip.

Usage

Definition

```
ENUMERATED
{
 layover (1), -- Layover
 relief (2), -- Relief
 control (3), -- Control
 transfer (4), -- Transfer
 recovery (5), -- Recovery
 pullIn (6), -- Pull in
 pullOut (7), -- Pull out
 maxLoadPt (8), -- Maximum load point
 arrive (9), -- Arrive
 depart (10), -- Depart
 schedAdhOn (11), -- Schedule Adherence On
 schedAdhOff (12), -- Schedule Adherence Off
 rtAdhOn (13), -- Route Adherence On
 rtAdhOff (14) -- Route Adherence Off
    -- 15-149 reserved
   -- 150-255 local use
…  -- # LOCAL_CONTENT
}
```

Data Element

Name SCH-TripTimePtTime

Identifier schdd 62

Purpose The time value associated with a time point for a particular trip.

Usage

Definition SCHTIME

Data Element

Name SCH-TripType

Identifier schdd 63

Purpose A classification of a trip, whether revenue or non-revenue.

Usage

Definition

```
ENUMERATED
{
  revenue (1) ,  -- Revenue
  pullIn (2),   -- Pull In (from vehicle base)
  pullOut (3),  -- Pull Out (to vehicle base)
  deadhead (4),  -- Deadhead
  extra (5),   -- Extra
  standby (6),  -- Standby
  garTransfer (7),  -- Garage transfer
  roadCall (8),  -- Road call
  roadCallReturn (9), -- Road call return
  roadTest (10),  -- Road test
  invalidMovement (11) -- Invalid movement
     -- 14-149 reserved
    -- 150-255 local use
…   -- # LOCAL_CONTENT  }
```

Data Element

Name SCH-TripTypeDescription

Identifier schdd 64

Purpose A description of the trip type.

Usage

Definition FOOTNOTE

Data Element

Name SCH-ValidationErrorType

Identifier schdd 103

Purpose Define the type of schedule validation failure that occurred.

Usage The "inc" in the enumerated values indicates 'inconsistent'. 'Geo' indicates geographic definition of a pattern, or pattern segment, 'runs' regers to operator assignments, and 'blocks' refers to vehicle assignements.

Definition

```
ENUMERATED
{
timepointPatternInc (1),
timepointPatternSegmentInc (2),
timepointRunningTimeInc (3),
timepointMissing (4),
stoppointPatternInc (5),
stoppointPatternSegmentInc (6),
stoppointMissing (7),
transfersTripsInc (8),
transfersStoppointsInc (9),
transfersPatternInc (10),
transfersPatternSegmentInc (11),
transfersNotesMissing (12),
patternsNotesMissing (13),
tripsNotesMissing (14),
timpointsNotesMissing (15),
stoppointsNotesMissing (16),
runsTripsInc (17),
blocksTripsInc (18),
patternsTripsInc (19),
patternSegmentsTripsInc (20),
patternGeoInc (21),
patternSegmentGeoInc (22),
stoppointInactive (23),
timepointInactive (24),
patternInactive (25),
patternSegmentInactive (26),
patternVersionUnavailable (27),
routeVersionUnavailable (28),
timepointVersionUnavailable (29),
stoppointVersionUnavailable (30),
transfersUnavailable (40),
runsUnavailable (41),
blocksUnavailable (42)
…  -- # LOCAL_CONTENT
}
```

Data Frame

Name SCHEvent

Identifier sch 3

Purpose A message that activates an event at a specified time, location, or both.

Usage Events may be associated with a pattern, a pattern segment or a trip. If an event is associated with a pattern segment, it is inherited by using patterns and trips. Events associated with a pattern are inherited by using trips.

Definition

```
SEQUENCE  {
activation-id  SEQUENCE (SIZE(1..10)) OF  SCH-ActivationID,
time-begin  SCH-TimeBegin  OPTIONAL,
point LRMS.GeoLocation  OPTIONAL,
activation-type  SEQUENCE (SIZE(1..10)) OF SCH-ActivationType,
fare-zone-id            CPT-FareZoneID  OPTIONAL,
                              radio-zone-id            CPT-RadioZoneID
OPTIONAL
}
```

Data Frame

Name SCHNoteInfo

Identifier sch 1005

Purpose Provide a text note associated with scheduling information.

Usage Provides the text associated with a note-id. Note-ids are included in various scheduling messages as links to the associated text.

Definition

```
SEQUENCE {
note-id                 SCH-NoteID,
note-designator         SCH-NoteDesignator          OPTIONAL,
note-text               SCH-NoteMsg
}
```

Data Frame

Name SCHOperatorAssignment

Identifier sch 1007

Purpose Group together the information required to describe an operator's work assignment, or a work assignment for which an operator has not yet been identified.

Usage

The fields :beginTime, endTime, beginLocation, endLocation, agency, operator-base, and vehicle-base are optional and available to meet individual agencies' needs.

Additional information about the trips referenced in the trips field can be obtained using the Subscribe Route Schedule, and/or Subscribe Trip Detail dialogs.

Multiple operator assignments that share the same run-id are part of the same assigned run. This allows for operator work assignments that span multiple routes. The begin-timepoint field is used if an operator is assigned to take over (relieve another operator) in the middle of a trip at a designated timepoint. Similarly end-timepoint is used only if the operator assignment ends in the middle of a trip at the designated timepoint.

The other-employees field specifies other transit employees that are scheduled to accompany the operator on the PTV. This may include conductors fare verifiers or other agency-defined jobs.

Definition

```
SEQUENCE {
 operator-num CPT-OperatorID OPTIONAL,
 operator-des CPT-OperatorDesignator OPTIONAL,
 other-employees   SEQUENCE (SIZE(1..10)) OF CPT-EmployeeID
OPTIONAL,
 vehicle CPT-VehicleID OPTIONAL,
 route SCH-RouteID,
 route-version SCH-TimetableVersionID,
 date CPT-ActivationDate,
 beginTime CPT-ActivationTime OPTIONAL,
 endTime CPT-DeactivationTime OPTIONAL,
 beginLocation LRMS.GeoLocation OPTIONAL,
 endLocation LRMS.GeoLocation OPTIONAL,
 agency CPT-AgencyID OPTIONAL,
 vehicle-base CPT-TransitFacilityID OPTIONAL,
 operator-base CPT-TransitFacilityID OPTIONAL,
 trips SEQUENCE (SIZE(1..20)) OF SCH-TripID,
begin-timepoint                SCH-TimepointID    OPTIONAL,
end-timepoint                  SCH-TimepointID            OPTIONAL,
 run-designator SCH-RunDesignator OPTIONAL,
 run-id-short CC-RunIDShort OPTIONAL,
 run-type SCH-RunType,
 day-type SCH-DayType,
 note SCH-NoteID OPTIONAL,
 mode CPT-Mode OPTIONAL,
 run-id SCH-RunID,                                    associated-
blocks        SEQUENCE (SIZE(1..10)) OF SCH-BlockID          OPTIONAL
  }
```

Data Frame

Name SCHPatternInfo

Identifier sch 1003

Purpose Provide a structure to define a pattern of stop and time points. Patterns may be combined to form routes. Pattern definitions may (based on agency policy) include timpoints only and no stoppoints.

Usage

The pattern-designator and pattern-name provide optional fields to include alternative identifiers for the pattern. The pattern-id must be present whether or not a pattern-designator or pattern-name is present.

The pattern notes field provides an optional capability to provide a reference to a text notes about the pattern.

The triggers field provides an optional capability to identify events to be triggered during the execution of the pattern.

The mode field provides an optional capability to specify a mode for the pattern.For example a street with bus and light rail service might have two similar patterns with different stoppoints and modes.

Definition

```
SEQUENCE {
patternID                SCH-PatternID,
pattern-designator       SCH-PatternDesignator       OPTIONAL,
pattern-name             SCH-PatternName             OPTIONAL,
pattern-notes            SEQUENCE (SIZE(1..100)) OF SCH-NoteID         OPTIONAL,
triggers                 SEQUENCE (SIZE(1..200)) OF SCH-ActivationID OPTIONAL,
mode                     CPT-Mode                                    OPTIONAL,
segments                 SEQUENCE (SIZE(1..100)) OF SCH-PatternSegmentID,
 radio-zones             SEQUENCE (SIZE(1..100)) OF CPTRadioZone   OPTIONAL,
 events                  SEQUENCE (SIZE(1..200)) OF SCHEvent   OPTIONAL
  }
```

Data Frame

Name SCHPatternSegment

Identifier Sch 1018

Purpose Provide a structure to define a list of time and stop points. Pattern segements can be combined to form patterns. Pattern segments may contain timpoints only and not specify stoppoints based on agency policy.

Usage A required wait (dwell) at a stoppoint can be defined by including a timepoint twice along with a colocated stopoint between the two timpoint instances. The times assigned to the two instances are used to reflect scheduled arrival and departure times at the bracketed stoppoint. The trace-points field provides a sequence of geographical points that can be used to map the shape of the route segment.

Definition

```
SEQUENCE {
segment-id          SCH-PatternSegmentID,
segment-name        SCH-PatternName  OPTIONAL,
segment-notes       SEQUENCE (SIZE(1..20)) OF SCH-NoteID          OPTIONAL,
timeStoppoints      SEQUENCE (SIZE(1..1000)) OF SCHTimeStoppoint ,
trace-points        SEQUENCE (SIZE(1..1000)) OF
LRMS.GeoLocation    OPTIONAL,
activation-date     CPT-ActivationDate            OPTIONAL,
deactivation-date   CPT-DeactivationDate          OPTIONAL
        }
```

Data Frame

Name SCHPTVRouteScheduleEntry

Identifier Sch 2040

Purpose Convey schedule information for a specified route to a PTV as part of its data load.

Usage Agencies may elect to load all routes to a vehicle, only routes the vehicle is expected to service or only routes serviced by the vehilcle's garage. Similarly agencies may elect to include all schedule trips for a route, or only trips to which the PTV has been assigned.

The mode, route-designator, and route-id-short fields provide additional information which may be useful for some agencies but are not required to achieve the schedule unload. The default-patterns field defines the movement patterns normally associated with this route. All of the patterns normally used in one direction of the route (A) should be listed in the order traversed, followed by all of the patterns (B) normally used in the opposite direction of the route. Optional fields direction-A, and direction-B allow the directions described in the paragraph to be named with standard names (e.g. N, NW, S, SE, Counterclockwise). Some agencies vary the patterns on a route from trip to trip or by time of day. Trips which execute a series of patterns other than the default patterns (for the A or B direction), should include trip patterns in the trip-info block defining the trip.

Definition

```
SEQUENCE {
route                SCH-RouteID,
route-designator     SCH-RouteDesignator          OPTIONAL,
route-ID-short       CC-RouteIDShort              OPTIONAL,
note-IDs             SEQUENCE (SIZE(1..100)) OF SCH-NoteID      OPTIONAL,
direction-A          SCH-RouteDirectionName                     OPTIONAL,
direction-B          SCH-RouteDirectionName                     OPTIONAL,
default-patternsA    SEQUENCE (SIZE(1..100)) OF SCH-PatternID,
default-patternsB    SEQUENCE (SIZE(1..100)) OF SCH-PatternID   OPTIONAL,
  scheduled-tripsA   SEQUENCE (SIZE(1..10000)) OF SCHTripInfo,
scheduled-tripsB     SEQUENCE (SIZE(1..10000)) OF SCHTripInfo   OPTIONAL,
notes                SEQUENCE (SIZE(1..10000)) OF SCHNoteInfo   OPTIONAL,
trips-to-delete      SEQUENCE (SIZE(1..10000)) OF SCH-TripID    OPTIONAL
}
```

Data Frame

Name SCHPullInOutInfo

Identifier sch 1014

Purpose Provide information describing a pull in or pull out.

Usage

The pull-in field indicates whether the block instance represents a pull in or pull out. If true the information describes a pull-in, if false the information describes a pull out.

The garage field identifies the garage where the pull in or pull out occurs.

The vehicle field identifies the vehicle to pull in or out.

The operator-ID field or the operator-des field identifies the operator involved in the pull in or pull out. At least one of these fields must be present. Both may optionally be present.

The date and time fields indicate when the pull in or pull out is scheduled to occur.

The note field provides an optional capability to associate a text message with the pull in or pull out. Text messages can be retrieved using the Subscribe Note List dialog.

The trip field provides an optional capability to associate the pull in or pull out with a trip. For a pull out, the trip represents the first assigned trip after the pull out.

Definition

```
SEQUENCE {
        pull-in         CPT-Boolean,
        garage          CPT-TransitFacilityID,
        vehicle         CPT-VehicleID,
        operator-ID     CPT-OperatorID          OPTIONAL,
        operator-des    CPT-OperatorDesignator  OPTIONAL,
        date            CPT-ActivationDate,
        time            CPT-ActivationTime,
        note            SCH-NoteID                      OPTIONAL,
        trip            SCH-TripID                      OPTIONAL
        }
```

Data Frame

Name SCHRoster

Identifier sch 8

Purpose Daily operator assignments grouped into weekly assignment packages.

Usage

Definition

```
SEQUENCE {
roster-id            SCH-RosterID,
roster-designator    SCH-RosterDesignator,
runs                 SEQUENCE (SIZE(1..50)) OF SCH-RunID,
days                 SEQUENCE (SIZE(1..7)) OF CPT-DayofWeek,
activationDate       CPT-ActivationDate,
deactivationDate     CPT-DeactivationDate
}
```

Data Frame

Name SCHRoutePair

Identifier sch 1015

Purpose Identify a pair of routes for the purpose of identifying transfers from the first to the second route.

Usage Identify a pair of routes for the purpose of identifying transfers from the first to the second route.

Definition

```
SEQUENCE {
        drop-route              SCH-RouteID,
        drop-route-name         SCH-RouteName OPTIONAL,
        pickup-route            SCH-RouteID,
        pickup-route-name       SCH-RouteName OPTIONAL
        }
```

Data Frame

Name SCHRouteVersion

Identifier sch 1000

Purpose Identify the correct version of timetable information for a specified route, and date interval.

Usage

Route version indicates a version number assigned to the route and associated trips.

Pattern version indicates a version number assigned to the stop pattern and timepoint lists used in creating the schedule for the route.

Start date and end date indicate the effective period for the indicated schedule.

The route update, pattern update, timepoint update and stoppoint update fields are used to signify the time of the last "row" update to each artifact. Row update times are used to triger queries for updates to previously stored versions of an artifact.

Definition

```
SEQUENCE {
route                SCH-RouteID,
startDate            CPT-ActivationDate,
endDate              CPT-DeactivationDate,
routeVersion         SCH-TimetableVersionID,
patternVersion       SCH-TimetableVersionID,
timepointVersion     SCH-TimetableVersionID,
stoppointVersion     CPT-StoppointVersion,
routeUpdate          CPT-DateTime      OPTIONAL,
patternUpdate        CPT-DateTime      OPTIONAL,
timepointUpdate      CPT-DateTime      OPTIONAL,
stoppointUpdate      CPT-DateTime      OPTIONAL
}
```

Data Frame

Name SCHRunningTimeEntry

Identifier Sch 2041

Purpose Define the schdeuled or expected running time for a specified part of a route. The part may be specified as a pattern, pattern segment, or pair of time/stoppoints.

Usage The service-types, earliest-time, latest-time, and conditions and weather fields (if present) specify constraints that must be met for the running time to be valid.

The running time is specified for an intreval specified by stoppoint A to stoppoint B, or timepointA to timepointB or for a pattern, or pattern segment.

Definition

```
SEQUENCE {
period-name          SCH-RunningTimePeriodName                    OPTIONAL,
service-types        SEQUENCE (SIZE(1..10)) OF SCH-ServiceType    OPTIONAL,
  earliest-time      SCH-TimeBegin                                OPTIONAL,
latest-time          SCH-TimeEnd                                          OPTIONAL,
day-types            SEQUENCE (SIZE(1..10)) OF SCH-DayType        OPTIONAL,
weather              TMDD.DataRoadWeather                         OPTIONAL,
conditions           TMDD.DataSurfaceConditions             OPTIONAL,
stoppointA           CPT-StoppointID                              OPTIONAL,
stoppointB           CPT-StoppointID                              OPTIONAL,
timepointA           SCH-TimepointID          OPTIONAL,
timepointB           SCH-TimepointID          OPTIONAL,
pattern              SCH-PatternID            OPTIONAL,
pattern-segment      SCH-PatternSegmentID     OPTIONAL,
running-time         SCH-RunningTimeSched     OPTIONAL,
waiting-times        SEQUENCE (SIZE(1..20)) OF SCHWaitingTime     OPTIONAL
}
```

Data Frame

Name SCHServiceAtStop

Identifier sch 1008

Purpose Describe a scheduled vehicle stop at a stop point. A series of these used in a message can be used to describe all of the service available at a stop point for a period of time.

Usage

Route, route direction, and optionally route name describe the route and direction that the vehicle is scheduled to be on when it makes the stop.

The route-version field defines the version of the timetable for the route that schedules the vehicle to make this stop.

The stop-id and optionally the stop-name field describe the stoppoint at which the vehicle is scheduled to stop.

The trip-id identifies the trip that includes the scheduled stop.

The time and date field indicate when the vehicle is scheduled to stop at the stop point.

Definition

```
SEQUENCE {
   route                SCH-RouteID,
   route-direction      SCH-RouteDirectionID,
   route-name           SCH-RouteName              OPTIONAL,
   route-version        SCH-TimetableVersionID,
   stop-id              CPT-StoppointID,
   stop-name            CPT-StoppointName          OPTIONAL,
   trip-id              SCH-TripID,
   time                 SCH-StoppointTime,
   date                 CPT-ActivationDate         OPTIONAL,
   associated-timepoint SCH-TimepointID            OPTIONAL
}
```

Data Frame

Name SCHStoppointPair

Identifier Sch 2042

Purpose Identify a pair of stoppoints for the purpose of specifying scheduled or estimated running time between them.

Usage

Definition

SEQUENCE {		
stoppointA	CPT-StoppointID	OPTIONAL,
stoppointB	CPT-StoppointID	OPTIONAL
}		

Data Frame

Name SCHTimepointInfo

Identifier sch 1004

Purpose Provide a structure to convey information about a timepoint.

Usage

The timepoint-designator, timepoint-name-short, and timepoint-name provide optional fields to include alternative identifiers for the timepoint. The timepoint-id must be present whether or not a timepoint-designator, timepoint-name-short, or timepoint-name is present.

The timepoint-notes field provides an optional capability to provide a reference to a text note about the timepoint. The note's contents can be obtained using the Subscribe Note List dialog.

The mode field provides an optional capability to specify a mode for the timepoint. For example a street with bus and light rail service might have two similar patterns with different timepoints points for each mode.

Definition

```
SEQUENCE {
   timepoint-id              SCH-TimepointID,
   timepoint-location        LRMS.GeoLocation,
   timepoint-designator      SCH-TimepointDesignator     OPTIONAL,
   timepoint-name            SCH-TimepointName           OPTIONAL,
   timepoint-name-short      SCH-TimePtNameShort         OPTIONAL,
   timepoint-notes           SEQUENCE (SIZE(1..500)) OF SCH-NoteID      OPTIONAL,
   timepoint-mode            CPT-Mode                    OPTIONAL,
   activation-date           CPT-ActivationDate          OPTIONAL,
   deactivation-date         CPT-DeactivationDate        OPTIONAL
   }
```

Data Frame

Name SCHTimepointInterval

Identifier sch 13

Purpose A one-way path of travel between two consecutive time points on a block.

Usage

Definition

```
SEQUENCE {
tpi-id                SCH-TimepointIntervalID    OPTIONAL,
tpi-designator        SCH-TimepointIntervalDesignator      OPTIONAL,
startPointID          SCH-TimepointID,   --terminus of interval
endPointID            SCH-TimepointID,   --terminus of interval
location              LRMS.RouteLocation OPTIONAL,
mode                  CPT-Mode  OPTIONAL
}
```

Data Frame

Name SCHTimeStoppoint

Identifier sch 1002

Purpose Provide a structure to define a sequence of stop points and time points. The structure must allow interweaving of stop points and time points.

Usage Each instance of this structure must include either a timepoint-id or a stoppoint id, but not both. If isAStop is TRUE, then the stoppoint-id must be present and the timepoint-id must be absent. If isAStop is FALSE, then the timepoint-id must be present and the stoppoint-id must be absent.

Agencies may elect to include ONLY timepoints in their pattern definitions.

Definition

```
SEQUENCE {
  isAStop                 CPT-Boolean,
  timepoint-id            SCH-TimepointID OPTIONAL,
  stoppoint-id            CPT-StoppointID   OPTIONAL
  }(WITH COMPONENTS {…,time-point-id PRESENT}        WITH
COMPONENTS {…, stop-point-id PRESENT})
```

Data Frame

Name SCHTimeTableEntry

Identifier sch 1016

Purpose Provide a timepoint name and a series of scheduled vehicle stop times at the timepoint, for a specified direction of travel.

Usage Direction of travel is specified externally in the PiXMLTimetable data frame.

Definition

```
SEQUENCE {
timepointID          SCH-TimepointID,
timepointName        SCH-TimepointName,
times                SEQUENCE (SIZE(1..1000)) OF SCH-TripTimePtTime
}
```

Data Frame

Name SCHTransferInfo

Identifier sch 1011

Purpose Describe a case where service is scheduled to facilitate a transfer from one transit service (route) to another. This structure defines not only the pair of stoppoints where the transfer occurs, but a specific instance of service scheduled to allow the transfer.

Usage The drop-off field describes the scheduled vehicle stop where the passenger would alight for the transfer, and the pick-up field describes the scheduled vehicle stop where the passenger would board the vehicle to leave the transfer.

Note that the structure allows the drop off and pick up to occur at different stoppoints. This is necessary to allow for transfers between routes at intersecting streets. Local agency policy determines whether two stoppoints are sufficiently close to be considered a valid transfer.

The minimum-wait field is used to support connection protection. The isProtected field indicates that the departing PTV should be held according to local policies if the arriving PTV is late.

Definition

```
SEQUENCE {

 transferID          SCH-TransferID,
drop-off             SCHServiceAtStop,
pick-up              SCHServiceAtStop,
notes                SEQUENCE (SIZE(1..100)) OF SCH-NoteID OPTIONAL,
 expected-wait       CPT-TimeInterval    OPTIONAL,
minimum-wait         CPT-TimeInterval    OPTIONAL,
isProtected          CPT-Boolean,
clusterID            CPT-TransferClusterID          OPTIONAL,
activation-date      CPT-ActivationDate OPTIONAL,
activation-time      CPT-ActivationTime OPTIONAL,
deactivation-date    CPT-DeactivationDate           OPTIONAL,
deactivation-time    CPT-DeactivationTime           OPTIONAL
}
```

Data Frame

Name SCHTripDetailInfo

Identifier sch 1010

Purpose Provide detailed information about a scheduled trip. This block includes the SCH-TripInfo block, and adds the route, vehicle, and operator identification.

Usage Either the operator-id or the operator-des field is required to identify the operator. Both may optionally be included. The operator's name may optionally be included as well.

The other-employees field optionally lists other employees (besides the operator) that are assigned to accompany the trip on the PTV.

Definition

```
SEQUENCE {
route                SCH-RouteID,
route-direction      SCH-RouteDirectionID,
route-name           SCH-RouteName          OPTIONAL,
route-direction-name SCH-RouteDirectionName OPTIONAL,
route-version        SCH-TimetableVersionID,
tripInfo             SCHTripInfo,
operator-id          CPT-OperatorID                OPTIONAL,
operator-des         CPT-OperatorDesignator        OPTIONAL,
operator-name        CPTPersonName                 OPTIONAL,
other-employees      SEQUENCE (SIZE(1..10)) OF CPT-EmployeeID    OPTIONAL,
vehicle              CPT-VehicleID          OPTIONAL,
activation-date      CPT-ActivationDate OPTIONAL,
deactivation-date    CPT-DeactivationDate          OPTIONAL,
relief-operator-id   CPT-OperatorID         OPTIONAL,
relief-operator-des  CPT-OperatorDesignator OPTIONAL,
relief-operator-name CPTPersonName          OPTIONAL,
relief-vehicle       CPT-VehicleID          OPTIONAL
}
```

Data Frame

Name SCHTripInfo

Identifier sch 1001

Purpose This data block describes a trip to be completed within the context of a known transit route.

Usage

The patterns field should be present for any trip that does not run the default sequence of patterns for the route and direction intended for the trip.

The run-id and block-id fields allow an agency to provide additional information, in the event that the trip-id is not sufficient identification.

TripTypeName is required (according to the definition of SCH-TripType) in any case where the trip-type is locally defined.

The event-list field allows the server to include required event information in the trip info. The optional timetable-version field within SchEvent structure should not be used inside of the SCH-TripInfo block.

The note-ids field provides a mechanism to refer to text notes that are relevant to particular trip. The text notes referred to by this field can be obtained by the subscriber using the Subscribe Note List dialog.

Definition

```
   SEQUENCE {
trip-id              SCH-TripID,
service-type         SCH-ServiceType,
day-type             SCH-DayType,
patterns             SEQUENCE (SIZE(1..100)) OF SCH-PatternID   OPTIONAL,
run-id               SCH-RunID                                   OPTIONAL,
block-id             SCH-BlockID                                 OPTIONAL,
trip-type            SCH-TripType,
trip-type-name       SCH-TripTypeDescription                     OPTIONAL,
trip-timepoint-times SEQUENCE (SIZE(1..500)) OF SCH-TripTimePtTime,
event-list           SEQUENCE (SIZE(1..500)) OF SCHEvent         OPTIONAL,
note-ids             SEQUENCE (SIZE(1..50)) OF SCH-NoteID         OPTIONAL,
op-time-type         SCH-OperatingTimeType                       OPTIONAL
}
```

Data Frame

Name SCHUnassignedOperator

Identifier sch 1013

Purpose Group together the information required to describe an unassigned operator.

Usage

The operator must be identified by either the operator-num or the operator-des based on the agency's practice. Optionally both may be used.

If the operator is assigned for a portion of the day, then begin-time is used to specify the beginning of the unassigned period, and end-time is used to specify the end of the unassigned period. If begin-time is not present, the operator is unassigned at the beginning of the day, if the end time is not present the operator is unassigned through the end of the day. If both fields are absent, the operator is unassigned for the entire day.

The agency and operator-base fields are optional and available for use if needed by an individual agency.

Definition

```
SEQUENCE {
operator-num          CPT-OperatorID           OPTIONAL,
operator-des          CPT-OperatorDesignator   OPTIONAL,
unassigned-date       CPT-DeactivationDate,
begin-time            CPT-DeactivationTime     OPTIONAL,
end-time              CPT-ActivationTime       OPTIONAL,
agency                CPT-AgencyID             OPTIONAL,
operator-base         CPT-TransitFacilityID    OPTIONAL
  }
```

Data Frame

Name SCHUnassignedVehicle

Identifier sch 1012

Purpose Group together the information required to describe an unassigned vehicle.

Usage

If the vehicle is assigned for a portion of the day, then begin-time is used to specify the beginning of the unassigned period, and end-time is used to specify the end of the unassigned period. If begin-time is not present, the vehicle is unassigned at the beginning of the day, if the end time is not present the vehicle is unassigned through the end of the day. If both fields are absent, the vehicle is unassigned for the entire day.

The agency and vehicle-base fields are optional and available for use if needed by an individual agency.

Definition

```
SEQUENCE {
vehicle                 CPT-VehicleID,
unassigned-date         CPT-DeactivationDate,
begin-time              CPT-DeactivationTime    OPTIONAL,
end-time                CPT-ActivationTime      OPTIONAL,
agency                  CPT-AgencyID            OPTIONAL,
vehicle-base            CPT-TransitFacilityID   OPTIONAL
  }
```

Data Frame

Name SCHValidationError

Identifier Sch 1017

Purpose Provide information about a schedule validation failure. If a schedule validation uncovers multiple errors, a separate instance of this frame is required for each error.

Usage the 'affected' fields are not intended to list all indirectly impacted artifacts, but to identify the artifacts most closely associated with the generated error to facilitate troubleshooting.

Definition

SEQUENCE {		
error-type	SCH-ValidationErrorType,	
affected-patterns	SEQUENCE (SIZE(1..50)) OF SCH-PatternID	OPTIONAL,
affected-segments	SEQUENCE (SIZE(1..50)) OF SCH-PatternSegmentID	OPTIONAL,
affected-trips	SEQUENCE (SIZE(1..50)) OF SCH-TripID	OPTIONAL,
affected-runs	SEQUENCE (SIZE(1..50)) OF SCH-RunID	OPTIONAL,
affected-blocks	SEQUENCE (SIZE(1..50)) OF SCH-BlockID	OPTIONAL,
affected-routes	SEQUENCE (SIZE(1..50)) OF SCH-RouteID	OPTIONAL,
affected-directions	SEQUENCE (SIZE(1..50)) OF SCH-RouteDirectionID	OPTIONAL,
affected-stoppoints	SEQUENCE (SIZE(1..50)) OF CPT-StoppointID	OPTIONAL,
affected-timepoints	SEQUENCE (SIZE(1..50)) OF SCH-TimepointID	OPTIONAL,
affected-transfers	SEQUENCE (SIZE(1..50)) OF SCH-TransferID	OPTIONAL,
explanation	CPT-Footnote	OPTIONAL
}		

Data Frame

Name

SCHVehicleAssignment

Identifier

sch 1006

Purpose

Group together the information required to describe a vehicle's work assignment. This can describe a vehicle assignment that may or may not have been bound to a specific vehicle ID.

Usage

The fields :pulloutTime, pullInTime, pulloutLocation, pullInLocation, agency, and vehicle-base are optional and available to meet individual agencies' needs.

Additional information about the trips referenced in the trips field can be obtained using the Subscribe Route Schedule, and/or Subscribe Trip Detail dialogs. If a block involves more than one route, a separate SchVehicleAssignment data block is required for each, in such cases the SchVehicleAssignemnts share the same block-id. The begin-timepoint field is used to a vehicle is assigned to begin a trip in the middle at the designated timepoint. Similarly end-timepoint is used only if the vehicle assignment ends in the middle of a trip at the designated timepoint.

Definition

```
SEQUENCE {
  vehicle            CPT-VehicleID                    OPTIONAL,
  route              SCH-RouteID,
  route-version      SCH-TimetableVersionID,
  date               CPT-ActivationDate,
  operator-num       CPT-OperatorID                   OPTIONAL,
  operator-des       CPT-OperatorDesignator           OPTIONAL,
  pulloutTime        SCH-PullOutTime                  OPTIONAL,
  pullInTime         SCH-PullInTime                   OPTIONAL,
  pulloutLocation    LRMS.GeoLocation                 OPTIONAL,
  pullInLocation     LRMS.GeoLocation                 OPTIONAL,
  agency             CPT-AgencyID                     OPTIONAL,
  vehicle-base       CPT-TransitFacilityID            OPTIONAL,
  trips              SEQUENCE (SIZE(1..100)) OF SCH-TripID,
  begin-timepoint    SCH-TimepointID                  OPTIONAL,
  end-timepoint      SCH-TimepointID                  OPTIONAL,
  block-id           SCH-BlockID,
  block-id-short     CC-BlockIDShort                  OPTIONAL,
  block-designators  SCH-BlockDesignator              OPTIONAL,
  block-name         SCH-BlockName                    OPTIONAL,
  day-type           SCH-DayType                      OPTIONAL,
  ptv-type           CPT-PTVehicleType,
  org-unit           CPT-OrganizationalUnitID         OPTIONAL,
  note               SCH-NoteID                       OPTIONAL
  }
```

Data Frame

Name SCHWaitingTime

Identifier Sch 2043

Purpose Define a waiting period for a PTV at a stoppoint, or other designated location.

Usage

Definition

```
SEQUENCE {
stoppoint          CPT-StoppointID                    OPTIONAL,
other-location          LRMS.GeoLocation                    OPTIONAL,
wait-time          SCH-RunningTimeSched
}
(WITH COMPONENTS {stoppoint/other-location PRESENT})
```

Message

Name SchMasterScheduleVersion

Identifier Sch 2001

Purpose Identify the version numbers of schedule related artifacts.

Usage

Definition

```
SEQUENCE {
subscriptionInfo        CPTSubscriptionHeader,
beginDate               CPT-ActivationDate,
endDate                 CPT-DeactivationDate,
routes                          SEQUENCE (SIZE(1..500)) OF SCH-RouteID,
versionInfo             SEQUENCE  (SIZE(1..100)) OF SCHRouteVersion
}
```

Message

Name SchMasterScheduleVersionSub

Identifier sch 2000

Purpose Request or cancel a subscription to the versions of timetable information in effect for specified dates and routes from the scheduling system. This elicits the version information about timetables, not the timetables themselves. A subscriber can use the version information to determine what timetable information it needs to obtain.

The elicited message is SchMasterScheduleVersion.

Usage

Definition

```
SEQUENCE {
        subscriptionInfo        CPTSubscriptionHeader,
        beginDate                       CPT-ActivationDate  OPTIONAL,
        endDate                 CPT-DeactivationDate  OPTIONAL,
        routes                          SEQUENCE  (SIZE(1..100)) OF SCH-RouteID
OPTIONAL
        }
```

Message

Name SchOperatorAssignmentFile

Identifier Sch 2036

Purpose Provide a list of bound or unbound operator assignments (runs) for load to a vehicle

Usage

Definition

```
SEQUENCE {
fileHeader          CPTLoadFileHeader,
assignments         SEQUENCE (SIZE(1..10000)) OF SCHOperatorAssignment
}
```

Message

Name SchOperatorAssignmentList

Identifier Sch 2013

Purpose This Message can be used in three ways: 1) To provide a list of operator work assignments which are available to be filled by actual operator assignments. 2) To provide a list of operators with assignments complete with the assigned operators 3) To provide a list of operator work assignments some of which are 'filled' and some are not.

Usage

Definition

```
   SEQUENCE {
   subscriptionInfo          CPTSubscriptionHeader,
   beginDate                 CPT-ActivationDate,
   beginTime                 CPT-ActivationTime,
   endDate                   CPT-DeactivationDate,
   endTime                   CPT-DeactivationTime,
update-since                 CPT-DateTime                OPTIONAL,
   specific-operatorIDs      SEQUENCE (SIZE(1..25000)) OF CPT-OperatorID
OPTIONAL,
   specific-operatorDes      SEQUENCE (SIZE(1..25000)) OF CPT-OperatorDesignator
OPTIONAL
   specific-routes           SEQUENCE (SIZE(1.500)) OF SCH-RouteID OPTIONAL,
   specific-garages          SEQUENCE (SIZE(1..100)) OF CPT-TransitFacilityID
OPTIONAL,
   assignments               SEQUENCE  (SIZE(1..100000)) OF SCHOperatorAssignment
   }
```

Message

Name SchOperatorAssignmentListSub

Identifier Sch 2012

Purpose Request the work assignments for a specified operator or group of operators or a specified route, or all assignments for a specified time interval. This message elicits work assignments which may or may not be filled by having operators assigned.

Usage

Definition

```
   SEQUENCE {
   subscriptionInfo          CPTSubscriptionHeader,
   beginDate                 CPT-ActivationDate,
   beginTime                 CPT-ActivationTime,
   endDate                   CPT-DeactivationDate,
   endTime                   CPT-DeactivationTime,
update-since                 CPT-DateTime      OPTIONAL,
   specific-operatorIDs      SEQUENCE (SIZE(1..25000)) OF CPT-OperatorID
OPTIONAL,
   specific-operatorDes      SEQUENCE (SIZE(1..25000)) OF CPT-OperatorDesignator
OPTIONAL
   specific-routes           SEQUENCE (SIZE(1..500)) OF SCH-RouteID OPTIONAL,
   specific-garages          SEQUENCE (SIZE(1..100)) OF CPT-TransitFacilityID OPTIONAL

   }
```

Message

Name SchPatternFile

Identifier Sch 2034

Purpose Provide a set of patterns for load to a vehicle. Each pattern defines a sequence of timepoints and stoppoints. Patterns may be combined to create routes.

Usage

Definition

```
SEQUENCE {
fileHeader              CPTLoadFileHeader,
updates-since           CPT-DateTime        OPTIONAL,
patterns                SEQUENCE  (SIZE(1..2000))OF SCHPatternInfo,
segments                SEQUENCE (SIZE(1..15000)) OF SCHPatternSegment        OPTIONAL,
pattern-notes           SEQUENCE (SIZE(1..5000)) OF SCHNoteInfo    OPTIONAL,
deleted-patterns        SEQUENCE (SIZE(1..2000)) OF SCH-PatternID    OPTIONAL,
deleted-segments        SEQUENCE (SIZE(1..15000)) OF SCH- PatternSegmentID
OPTIONAL
}
```

Message

Name SchPatternList

Identifier sch 2005

Purpose Provide a specified version of the pattern list. Each pattern defines a sequence of timepoints and stoppoints. Patterns may be combined to create routes.

Usage

Definition

```
SEQUENCE {
        subscriptionInfo        CPTSubscriptionHeader,
        patternVersion                  SCH-TimetableVersionID,
                update-since    CPT-DateTime            OPTIONAL,
stoppointVersion        CPT-StoppointVersion,
timepointVersion        SCH-TimetableVersionID,
patterns                SEQUENCE (SIZE(1..2000)) OF SCHPatternInfo  OPTIONAL,
                                                        pattern-notes
 SEQUENCE (SIZE(1..5000)) OF SCHNoteInfo OPTIONAL,      segments
SEQUENCE (SIZE(1..15000)) OF SCHPatternSegment          OPTIONAL,
                                                        deleted-patterns
SEQUENCE (SIZE(1..5000)) OF SCH-PatternID       OPTIONAL,
                                                deleted-segments
SEQUENCE (SIZE(1..15000)) OF SCH-PatternSegmentID       OPTIONAL
        }
```

Message

Name SchPatternListSub

Identifier sch 2004

Purpose Request a specified version of the pattern list. Each pattern defines a sequence of timepoints and stoppoints. Patterns may be combined to create routes.

Usage

Definition

```
SEQUENCE {
        subscriptionInfo        CPTSubscriptionHeader,
        patternVersion                  SCH-TimetableVersionID,
updated-since           CPT-DateTime            OPTIONAL
        }
```

Message

Name SchPullInList

Identifier Sch 2029

Purpose Provide the scheduled pull ins for a specified vehicle or group of vehicles for a specified time interval.

Usage

Definition

```
   SEQUENCE {
   subscriptionInfo          CPTSubscriptionHeader,
   beginDate                       CPT-ActivationDate,
   beginTime                       CPT-ActivationTime,
   endDate                   CPT-DeactivationDate,
   endTime                   CPT-DeactivationTime,
   specific-vehicles         SEQUENCE (SIZE(1..25000)) OF CPT-VehicleID OPTIONAL,
   specific-routes                 SEQUENCE  (SIZE(1..500)) OF SCH-RouteID OPTIONAL,
   specific-garages          SEQUENCE  (SZIE(1..100)) OF CPT-TransitFacilityID
OPTIONAL,
   pull-ins                  SEQUENCE (SIZE(1..25000)) OF SCHPullInOutInfo
   }
```

Message

Name SchPullInListSub

Identifier Sch 2028

Purpose Request the pull ins for specified vehicle(s) or garage(s) for a specified time interval.

Usage

Definition

```
SEQUENCE {
   subscriptionInfo          CPTSubscriptionHeader,
   beginDate                       CPT-ActivationDate,
   beginTime                       CPT-ActivationTime,
   endDate                   CPT-DeactivationDate,
   endTime                   CPT-DeactivationTime,
   specific-vehicles         SEQUENCE (SIZE(1..25000)) OF CPT-VehicleID OPTIONAL,
   specific-routes                 SEQUENCE  (SIZE(1..100)) OF SCH-RouteID OPTIONAL,
   specific-garages          SEQUENCE  (SIZE(1..100)) OF CPT-TransitFacilityID
OPTIONAL
   }
```

Message

Name SchPullOutList

Identifier Sch 2027

Purpose Provide the scheduled pull outs for a specified vehicle or group of vehicles for a specified time interval.

Usage

Definition

```
   SEQUENCE {
   subscriptionInfo              CPTSubscriptionHeader,
   beginDate                             CPT-ActivationDate,
   beginTime                             CPT-ActivationTime,
   endDate                       CPT-DeactivationDate,
   endTime                       CPT-DeactivationTime,
   specific-vehicles             SEQUENCE (SIZE(1..25000)) OF CPT-VehicleID OPTIONAL,
   specific-routes                       SEQUENCE  (SIZE(1..500)) OF SCH-RouteID OPTIONAL,
   specific-garages              SEQUENCE  (SIZE(1..100)) OF CPT-TransitFacilityID
OPTIONAL,
   pull-outs                     SEQUENCE (SIZE(1..25000)) OF SCHPullInOutInfo
   }
```

Message

Name SchPullOutListSub

Identifier Sch 2026

Purpose Request the pull outs for specified vehicle(s) or garage(s) for a specified time interval.

Usage

Definition

```
SEQUENCE {
   subscriptionInfo        CPTSubscriptionHeader,
   beginDate                       CPT-ActivationDate,
   beginTime                       CPT-ActivationTime,
   endDate                 CPT-DeactivationDate,
   endTime                 CPT-DeactivationTime,
   specific-vehicles       SEQUENCE (SIZE(1..25000)) OF CPT-VehicleID OPTIONAL,
   specific-routes                 SEQUENCE  (SIZE(1..100)) OF SCH-RouteID OPTIONAL,
   specific-garages        SEQUENCE  (SIZE(1..100)) OF CPT-TransitFacilityID
OPTIONAL
   }
```

Message

Name SchReportValidationErrors

Identifier Sch 2038

Purpose Report to a scheduling system, data repository, or other agency specified application that a schedule is invalid.

Usage

Definition

```
SEQUENCE {
originator      CPT-ApplicationID,
version-used                SCHRouteVersion,
time-failed     CPT-DateTime        OPTIONAL,
errors-found SEQUENCE (SIZE(1..300)) OF SCHValidationError
}
```

Message

Name SchReportValidationErrorsAck

Identifier Sch 2039

Purpose Acknowledge a reported schedule validation failure.

Usage

Definition

```
SEQUENCE {
originator      CPT-ApplicationID, --refers to the application detecting the failure
version-used                SCHRouteVersion
}
```

Message

Name SchRosterList

Identifier Sch 2031

Purpose Provide a list of rosters for a specified list of garages, operators, or routes or "all" routes.

Usage

Definition

```
SEQUENCE {
subscriptionInfo                CPTSubscriptionHeader,
beginDate                       CPT-ActivationDate,
endDate                         CPT-DeactivationDate,
specificOperatorIDs             SEQUENCE (SIZE(1..25000)) OF CPT-
OperatorID              OPTIONAL,
specific-Routes                 SEQUENCE  (SIZE(1..100)) OF SCH-RouteID
OPTIONAL,
specific-Garages                SEQUENCE  (SIZE(1..100)) OF CPT-
TransitFacilityID       OPTIONAL,
rosters                                 SEQUENCE (SIZE(1..25000)) OF SCHRoster
}
```

Message

Name SchRosterListSub

Identifier Sch 2030

Purpose Request a list of rosters for a specified list of routes, operators, garages or "all" rosters.

Usage

Definition

```
SEQUENCE {
subscriptionInfo            CPTSubscriptionHeader,
beginDate                   CPT-ActivationDate,
endDate                     CPT-DeactivationDate,
specificOperatorIDs         SEQUENCE (SIZE(1..25000)) OF CPT-
OperatorID          OPTIONAL,
specific-Routes             SEQUENCE  (SIZE(1..500)) OF SCH-RouteID
OPTIONAL,
specific-Garages            SEQUENCE  (SIZE(1..100)) OF CPT-
TransitFacilityID   OPTIONAL    }
```

Message

Name SchRouteSchedule

Identifier sch 2003

Purpose Provide a specified version of timetable information describing the scheduled trips for a specified route.

Usage

Definition

```
SEQUENCE {
subscriptionInfo          CPTSubscriptionHeader,
route                     SCH-RouteID,
        update-begin        CPT-DateTime        OPTIONAL,
route-name                SCH-RouteName    OPTIONAL,
routeVersion              SCH-TimetableVersionID,
activation-date           CPT-ActivationDate,
deactivation-date         CPT-DeactivationDate,
mode                      CPT-Mode OPTIONAL,
route-designator          SCH-RouteDesignator OPTIONAL,
route-ID-short            CC-RouteIDShort OPTIONAL,
note-ids          SEQUENCE (SIZE(1..100)) OF SCH-NoteID    OPTIONAL,
notes             SEQUENCE (SIZE(1..2000)) OF SCHNoteInfo OPTIONAL,
direction-A       SCH-RouteDirectionName    OPTIONAL,
direction-B       SCH-RouteDirectionName    OPTIONAL,
default-patternsA SEQUENCE (SIZE(1..100)) OF SCH-PatternID  OPTIONAL,
default-patternsB SEQUENCE  (SIZE(1..100)) OF SCH-PatternID OPTIONAL,
scheduled-tripsA  SEQUENCE  (SIZE(1..15000)) OF SCHTripInfo OPTIONAL,
scheduled-tripsB  SEQUENCE (SIZE(1..15000)) OF SCHTripInfo OPTIONAL,
                                                    deleted-tripsA
SEQUENCE (SIZE(1..10000)) OF SCH-TripID      OPTIONAL,
                                              deleted-tripsB    SEQUENCE
(SIZE(1..10000)) OF SCH-TripID   OPTIONAL
}
```

Message

Name SchRouteScheduleFile

Identifier Sch 2035

Purpose Provide scheduled trips by route for upload to a vehicle. Agencies may include all routes or a subset of routes in vehicle loads.

Usage

Definition

```
SEQUENCE {
fileHeader              CPTLoadFileHeader,
update-begin          CPT-DateTime       OPTIONAL,
route-schedules       SEQUENCE (SIZE(1..500)) OF SCHPTVRouteScheduleEntry
OPTIONAL,
routes-to-delete      SEQUENCE (SIZE(1..500)) OF SCH-RouteID    OPTIONAL
}
```

Message

Name SchRouteScheduleSub

Identifier sch 2002

Purpose Request a specified version of timetable information for a specified route.
The elicited message is SchRouteSchedule.

Usage

Definition

```
SEQUENCE {
        subscriptionInfo    CPTSubscriptionHeader,
        route                       SCH-RouteID,
        update-begin        CPT-DateTime        OPTIONAL,
        routeVersion                SCH-TimetableVersionID,
        include-events              CPT-Boolean
        }
```

Message

Name SchRunningTimeList

Identifier Sch 2040

Purpose Convey a list of shceduled running times, for a set of routes, patterns, pattern segments, timpoint pairs or stoppoint pairs.

Usage

Definition

```
SEQUENCE {
subscriptionInfo        CPTSubscriptionHeader,
patternVersion                  SCH-TimetableVersionID      OPTIONAL,
routes                  SEQUENCE (SIZE(1..500)) OF SCH-RouteID      OPTIONAL,
patterns      SEQUENCE (SIZE(1..15000)) OF SCH-PatternID  OPTIONAL,
pattern-segments        SEQUENCE (SIZE(1..15000)) OF SCH-
PatternSegmentID        OPTIONAL,
stoppoint-intervals     SEQUENCE (SIZE(1..1000)) OF SCHStoppointPair
OPTIONAL,

timepoint-intervals     SEQUENCE (SIZE(1..1000)) OF
SCHTimepointInterval OPTIONAL,
running-times                   SEQUENCE (SIZE(1..15000)) OF SCHRunningTimeEntry
}
```

Message

Name SchRunningTimeListSub

Identifier Sch 2041

Purpose Request a list of scheduled running times for a set of routes, patterns, pattern segments, timepoint pairs or stoppoint pairs.

Usage

Definition

```
SEQUENCE {
subscriptionInfo          CPTSubscriptionHeader,
patternVersion                    SCH-TimetableVersionID        OPTIONAL,
routes                    SEQUENCE (SIZE(1..500)) OF SCH-RouteID        OPTIONAL,
patterns      SEQUENCE (SIZE(1..5000)) OF SCH-PatternID    OPTIONAL,
pattern-segments          SEQUENCE (SIZE(1..15000)) OF SCH-
PatternSegmentID          OPTIONAL,
stoppoint-intervals       SEQUENCE (SIZE(1..15000)) OF
SCHStoppointPair                  OPTIONAL,
timepoint-intervals       SEQUENCE (SIZE(1..1000)) OF
SCHTimepointInterval OPTIONAL
}
```

Message

Name SchStopServiceList

Identifier Sch 2015

Purpose Provide a list of the service (scheduled transit vehicle visits) at a stoppoint or list of stoppoints.

Usage

Definition

```
SEQUENCE {
        subscriptionInfo        CPTSubscriptionHeader,
        beginDate                       CPT-ActivationDate,
        beginTime                       CPT-ActivationTime,
        endDate                 CPT-DeactivationDate,
        endTime                 CPT-DeactivationTime,
        stoppoints                      SEQUENCE (SIZE(1..25000)) OF CPT-
StoppointID,
        service                         SEQUENCE (SIZE(1..25000)) OF
SCHServiceAtStop
        }
```

Message

Name SchStopServiceListSub

Identifier Sch 2014

Purpose Request a list of the service (scheduled transit vehicle visits) at a stoppoint or list of stoppoints.

Usage

Definition

```
SEQUENCE {
        subscriptionInfo        CPTSubscriptionHeader,
        beginDate                       CPT-ActivationDate,
        beginTime                       CPT-ActivationTime,
        endDate                 CPT-DeactivationDate,
        endTime                 CPT-DeactivationTime,
        stoppoints                      SEQUENCE (SIZE(1..25000)) OF CPT-
StoppointID,
        }
```

Message

Name SchTimepointList

Identifier sch 2007

Purpose Provide a specified version of timepoint information

Usage

Definition

```
SEQUENCE {
   subscriptionInfo                CPTSubscriptionHeader,
update-begin        CPT-DateTime        OPTIONAL,
   timepointVersion                SCH-TimetableVersionID,
   timepoints                          SEQUENCE (SIZE(1..10000)) OF SCHTimepointInfo,
                                       timepoint-notes       SEQUENCE
(SIZE(1..15000)) OF SCHNoteInfo         OPTIONAL,
                                    deleted-timepoints     SEQUENCE
(SIZE(1..25000)) OF SCH-TimepointID    OPTIONAL
   }
```

Message

Name SchTimepointListSub

Identifier sch 2006

Purpose Request a specified version of timepoint information

Usage

Definition

```
SEQUENCE {
   subscriptionInfo              CPTSubscriptionHeader,
   timepointVersion              SCH-TimetableVersionID,
                  update-begin          CPT-DateTime      OPTIONAL,
   }
```

Message

Name SchTimePointsFile

Identifier Sch 2032

Purpose Provide a specified version of timepoint information for load to a vehicle.

Usage

Definition

```
SEQUENCE {
fileHeader              CPTLoadFileHeader,
updates-since                   CPT-DateTime        OPTIONAL,
timepoints              SEQUENCE (SIZE(1..25000)) OF SCHTimepointInfo,
timepoint-notes         SEQUENCE (SIZE(1..15000)) OF SCHNoteInfo
OPTIONAL,
deleted-timepoints      SEQUENCE (SIZE(1..25000)) OF SCH-TimepointID            OPTIONAL
}
```

Message

Name SchTransferList

Identifier Sch 2021

Purpose Provide a list of the scheduled transfer opportunities for a list of routes, route pairs, or stoppoints.

Usage

Definition

```
SEQUENCE {
subscriptionInfo        CPTSubscriptionHeader,
beginDate               CPT-ActivationDate,
beginTime               CPT-ActivationTime,
endDate                         CPT-DeactivationDate,
endTime                         CPT-DeactivationTime,
updates-since                   CPT-DateTime                    OPTIONAL,
stoppoints              SEQUENCE (SIZE(1..25000)) OF CPT-StoppointID OPTIONAL
routes                          SEQUENCE (SIZE(1..500)) OF SCH-RouteID OPTIONAL,
route-pairs             SEQUENCE (SIZE(1..25000)) OF SCHRoutePair OPTIONAL,
transfer-notes              SEQUENCE (SIZE(1..1000)) OF SCHNoteInfo         OPTIONAL,
transfer-clusters       SEQUENCE (SIZE(1..1000)) OF CPTTransferCluster      OPTIONAL,
deleted-notes               SEQUENCE (SIZE(1..1000)) OF SCH-NoteID          OPTIONAL,
deleted-clusters        SEQUENCE (SIZE(1..1000)) OF CPT-TransferClusterID   OPTIONAL,

deleted-transfers       SEQUENCE (SIZE(1..1000)) OF SCH-TransferID  OPTIONAL,
transfers               SEQUENCE (SIZE(1..10000)) OF SCHTransferInfo
}
```

Message

Name SchTransferListSub

Identifier Sch 2020

Purpose Request a list of the scheduled transfer opportunities for a list of routes, route pairs, or stoppoints.

Usage

Definition

```
SEQUENCE {
subscriptionInfo        CPTSubscriptionHeader,
beginDate               CPT-ActivationDate,
beginTime               CPT-ActivationTime,
endDate                         CPT-DeactivationDate,
endTime                         CPT-DeactivationTime,
updates-since                   CPT-DateTime                    OPTIONAL,
stoppoints              SEQUENCE (SIZE(1..25000)) OF CPT-StoppointID OPTIONAL,
routes                          SEQUENCE (SIZE(1..500)) OF SCH-RouteID OPTIONAL,
route-pairs             SEQUENCE (SIZE(1..25000)) OF SCHRoutePair OPTIONAL
}
```

Message

Name SchTripDetailList

Identifier Sch 2019

Purpose Request a list of detailed trip information for a specified set of trips.

Usage

Definition

```
SEQUENCE {
        subscriptionInfo        CPTSubscriptionHeader,
        beginDate                       CPT-ActivationDate,
        beginTime                       CPT-ActivationTime,
        endDate                 CPT-DeactivationDate,
        endTime                 CPT-DeactivationTime,
        trips                           SEQUENCE (SIZE(1..100000)) OF SCH-TripID
OPTIONAL,
        timepoints                      SEQUENCE (SIZE(1..500)) OF SCH-TimepointID
OPTIONAL,
        stoppoints                      SEQUENCE (SIZE(1..25000)) OF CPT-
StoppointID OPTIONAL,
        routes                          SEQUENCE (SIZE(1..100)) OF SCH-RouteID
OPTIONAL,
        trip-details                    SEQUENCE (SIZE(1..500)) OF SCHTripDetailInfo
        }
```

Message

Name SchTripDetailListSub

Identifier Sch 2018

Purpose Request a list of detailed trip information for a specified set of trips.

Usage

Definition

```
SEQUENCE {
        subscriptionInfo        CPTSubscriptionHeader,
        beginDate                       CPT-ActivationDate,
        beginTime                       CPT-ActivationTime,
        endDate                 CPT-DeactivationDate,
        endTime                 CPT-DeactivationTime,
        trips                           SEQUENCE (SIZE(1..100000))OF SCH-TripID
OPTIONAL,
        timepoints                      SEQUENCE (SIZE(1..10000)) OF SCH-
TimepointID OPTIONAL,
        stoppoints                      SEQUENCE (SIZE(1..25000)) OF CPT-
StoppointID OPTIONAL,
        routes                          SEQUENCE (SIZE(1..100)) OF SCH-RouteID
OPTIONAL
        }
```

Message

Name SchUnassignedOperatorList

Identifier Sch 2025

Purpose Provide a list of the unassigned operators for a specified time interval.

Usage

Definition

```
   SEQUENCE {
   subscriptionInfo              CPTSubscriptionHeader,
   beginDate                             CPT-ActivationDate,
   beginTime                             CPT-ActivationTime,
   endDate                       CPT-DeactivationDate,
   endTime                       CPT-DeactivationTime,
   specific-operatorIDs          SEQUENCE (SIZE(1..25000)) OF CPT-OperatorID
OPTIONAL,
   specific-operatorDes                  SEQUENCE (SIZE(1..25000)) OF CPT-OperatorDesignator
OPTIONAL,
   specific-bases                        SEQUENCE (SIZE(1..100)) OF CPT-TransitFacilityID
OPTIONAL,
   unassigned-operators                  SEQUENCE (SIZE(1..25000)) OF SCHUnassignedOperator

   }
```

Message

Name SchUnassignedOperatorListSub

Identifier Sch 2024

Purpose Request a list of unassigned operators for a specified time interval

Usage

Definition

```
SEQUENCE {
   subscriptionInfo              CPTSubscriptionHeader,
   beginDate                             CPT-ActivationDate,
   beginTime                             CPT-ActivationTime,
   endDate                       CPT-DeactivationDate,
   endTime                       CPT-DeactivationTime,
   specific-operatorIDs          SEQUENCE (SIZE(1..25000)) OF CPT-OperatorID
OPTIONAL,
   specific-operatorDes                  SEQUENCE (SIZE(1..25000)) OF CPT-OperatorDesignator
OPTIONAL,
   specific-bases                        SEQUENCE (SIZE(1..100)) OF CPT-TransitFacilityID
OPTIONAL
   }
```

Message

Name SchUnassignedVehicleList

Identifier Sch 2023

Purpose Provide a list of the unassigned vehicles for a specified time interval.

Usage

Definition

```
SEQUENCE {
   subscriptionInfo          CPTSubscriptionHeader,
   beginDate                       CPT-ActivationDate,
   beginTime                       CPT-ActivationTime,
   endDate                   CPT-DeactivationDate,
   endTime                   CPT-DeactivationTime,
   specific-vehicles         SEQUENCE (SIZE(1..25000)) OF CPT-VehicleID OPTIONAL,
   specific-garages          SEQUENCE (SIZE(1..100)) OF CPT-TransitFacilityID
OPTIONAL,
   vehicle-attributes        SEQUENCE (SIZE(1..20)) OF CPT-PTVehicleAttribute
OPTIONAL,
   vehicle-types                   SEQUENCE (SIZE(1..10)) OF CPT-PTVehicleType
OPTIONAL,
   unassigned-vehicles             SEQUENCE (SIZE(1..25000)) OF SCHUnassignedVehicle
   }
```

Message

Name SchUnassignedVehicleListSub

Identifier Sch 2022

Purpose Request the unassigned vehicles for a specified time interval.

Usage

Definition

```
    SEQUENCE {
    subscriptionInfo            CPTSubscriptionHeader,
    beginDate                           CPT-ActivationDate,
    beginTime                           CPT-ActivationTime,
    endDate                     CPT-DeactivationDate,
    endTime                     CPT-DeactivationTime,
    specific-vehicles           SEQUENCE (SIZE(1..25000)) OF CPT-VehicleID OPTIONAL,
    specific-garages            SEQUENCE (SIZE(1..100)) OF CPT-TransitFacilityID
OPTIONAL,
    vehicle-attributes          SEQUENCE (SIZE(1..20)) OF CPT-PTVehicleAttribute
OPTIONAL,
    vehicle-types                       SEQUENCE (SIZE(1..10)) OF CPT-PTVehicleType
OPTIONAL
    }
```

Message

Name SchVehicleAssignmentFile

Identifier Sch 2037

Purpose Provide vehicle assignments (blocks) for load to a vehicle.

Usage

Definition

```
SEQUENCE {
fileHeader          CPTLoadFileHeader,
assignments         SEQUENCE (SIZE(1..25000)) OF SCHVehicleAssignment
}
```

Message

Name SchVehicleAssignmentList

Identifier Sch 2011

Purpose This message can be used in three ways 1) to provide a list of vehicle work assignments (blocks) which are available to be filled by actual vehicle assignments, 2) to provide a list of vehicle assignments (blocks) complete with the assigned vehicles identified, or 3) to provide a list of vehicle work assignments (blocks) some of which have and some of which have not been filled by an identified vehicle.

Usage

Definition

```
   SEQUENCE {
   subscriptionInfo              CPTSubscriptionHeader,
   beginDate                           CPT-ActivationDate,
   beginTime                           CPT-ActivationTime,
   endDate                       CPT-DeactivationDate,
   endTime                       CPT-DeactivationTime,
updateSince          CPT-DateTime     OPTIONAL,
   specific-vehicles             SEQUENCE (SIZE(1..25000)) OF CPT-VehicleID OPTIONAL,
   specific-routes                     SEQUENCE (SIZE(1..500)) OF SCH-RouteID OPTIONAL,
   specific-garages              SEQUENCE (SIZE(1..100)) OF CPT-TransitFacilityID
OPTIONAL,
   assignments                         SEQUENCE (SIZE(1..25000)) OF SCHVehicleAssignment
   }
```

Message

Name SchVehicleAssignmentListSub

Identifier Sch 2010

Purpose Request the assignments(blocks) for a specified vehicle or group of vehicles, or specified routes, or specified garages for a specified time interval. This message elicits assignments (blocks) which may or may not be filled by having a vehicle identified and assigned to the work.

Usage

Definition

```
SEQUENCE {
   subscriptionInfo          CPTSubscriptionHeader,
   beginDate                       CPT-ActivationDate,
   beginTime                       CPT-ActivationTime,
   endDate                   CPT-DeactivationDate,
   endTime                   CPT-DeactivationTime,
updateSince          CPT-DateTime              OPTIONAL,
   specific-vehicles         SEQUENCE (SIZE(1..25000)) OF CPT-VehicleID OPTIONAL,
   specific-routes                 SEQUENCE(SIZE(1..500)) OF SCH-RouteID OPTIONAL,
   specific-garages          SEQUENCE(SIZE(1..100)) OF CPT-TransitFacilityID OPTIONAL

   }
```

Subscribe Master Schedule Version

TCIP Dialog Definition Page 1

Dialog Name: Subscribe Master Schedule Version
Business Area: Sch
Dialog Pattern: Subscription

Purpose: Allows a subscriber to determine the currently available schedules {by route(s) and date(s)} from the scheduling system. Based on this information the subscriber can elicit the information that is available and required using other dialogs.

Assumptions:

1. By default this is assumed to be an event driven subscription.
2. The publisher side determines what internal event triggers a new schedule to become available. For example users may be editing schedules for future use without making them available to subscribers.
3. The publisher may be a Scheduling System (SCH) or a Data Repository (DR).
4. The subscriber may be any Authorized Business System (ABS), Traveler Information System (TRV), CAD/AVL System (CAD), Customer Service System (CSS), Personnel Management System (PER), Garage Operations System (GOS), Maintenance Management System (MM), Data Repository (DR), or Fare System (FAR).

Narrative:

1.The subscriber determines the routes (or all routes), and the date range of interest, length of subscription, and prepares a subscription request, and sends it to the publisher.

2. The scheduling system (or alternate schedule repository) ("Publisher") validates the request and determines:

A. The request is invalid, unauthorized or cannot be serviced. The publisher then generates a CptSubErrorNotice to the subscriber and the dialog ends.

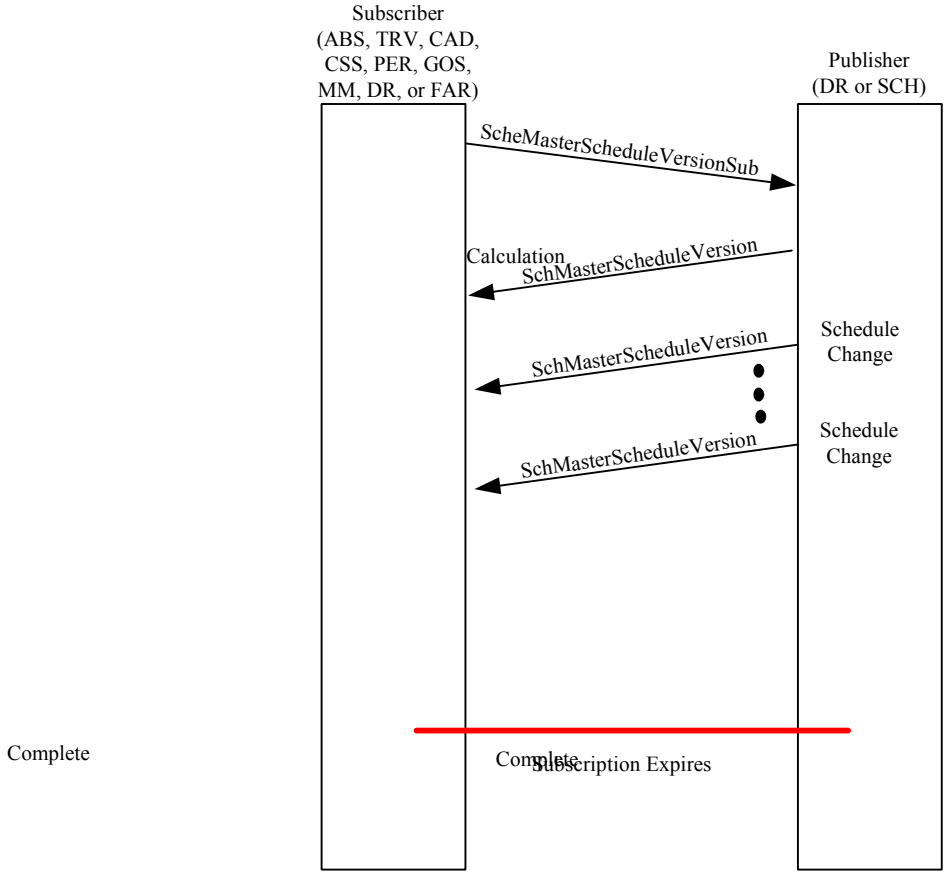
B. The request can be serviced in part. For example the subscription may be downgraded to expire sooner than what the subscriber requested, or a subset of the requested routes can be serviced, or a narrower date range of schedules are available than requested. The publisher may either service the part of the request that is possible, or generate a CptSubErrorNotice as described in A above. If the Publisher elects to service the part of the request the remaining processing treats the serviceable portion as if it were the entire request.

C. The request can be serviced. The publisher prepares a SchMasterScheduleVersion message in response to the subscription request.

3. Assuming the subscription is an event subscription, the publisher waits for the list of available, subscribed schedules to change, and notifies the subscriber using a SchMasterScheduleVersion message.

4. The dialog ends if the publisher generates a CptSubErrorNotice at any time for the subscription request, or if the subscription expires, or if the subscriber sends a SchMasterScheduleVersionSub message with a request identifier matching the original request and a request type of cancel.

Message Sequence Diagram Page 2



Normal Execution of Event-Driven "Subscribe Master Schedule Version" Subscription Dialog

TCIP Dialog Definition Page 3

Dialog Name: Subscribe Master Schedule Version
Business Area: Sch
Dialog Pattern: Subscription

Message Name	Message Identifier	Role
SchMasterScheduleVersionSub	sch 2000	Request subscription, cancel subscription from the subscriber to the publisher.
SchMasterScheduleVersion	sch 2001	Provide subscribed schedule information from the publisher to the subscriber.
CptSubErrorNotice	cpt 2000	End the dialog with an error notification from the publisher to the subscriber.

Notes:

Subscribe Operator Assignments

TCIP Dialog Definition Page 1

Dialog Name: Subscribe Operator Assignments
Business Area: Sch
Dialog Pattern: Subscription

Purpose: Allows a subscriber to obtain operator work assignments for a specified time interval for specified operators, routes or garages. The subscriber can obtain assignments for the specified interval for all operators by not specifying a list of operators, garages, or routes. Work Assignments may be "unbound" (no operator assigned to the work) or "bound" (with an assigned operator).

Assumptions:

1. May be a query or event-driven subscription.
2. This dialog may be used with a schedule repository (other than the scheduling/runcutting system) as the publisher.
3. The publisher may be a Personnel Management System (PER), Data Repository (DR), or a Scheduling System (SCH).
4. The subscriber may be a CAD/AVL System (CAD), Garage Operations System (GOS), Data Repository (DR), Authorized Business System (ABS) or a Personnel Management System (PER).
5. The update-since field in the SchOperatorAssignmentsList and SchOperatorAssignmentsListSub messages can be used to request and obtain updates since a specific date/time. In the event driven subscription the publisher has the options to only send updates after the initial provision of the list.

Narrative:

1.The subscriber determines the operators, garages routes, required (or all). The subscriber sends a SchOperatorAssignmentListSub message to the publisher with the subscription type indicating query, or event-driven.

2. The scheduling system (or alternate schedule repository) ("Publisher") validates the request and determines:

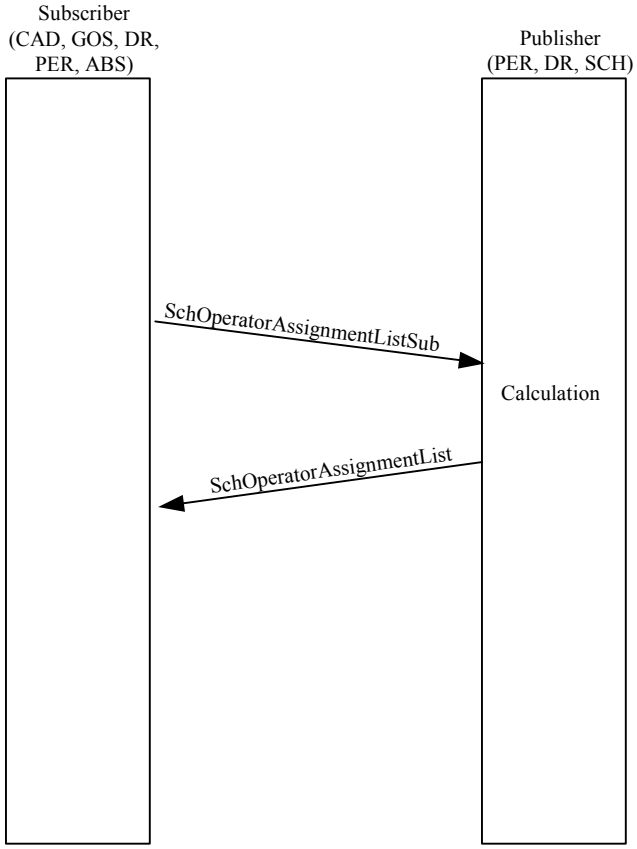
A. The request is invalid, unauthorized or cannot be serviced. The publisher then generates a CptSubErrorNotice to the subscriber and the dialog ends.

B. The request can be serviced. The publisher prepares a SchOperatorAssignmentList message in response to the subscription request.

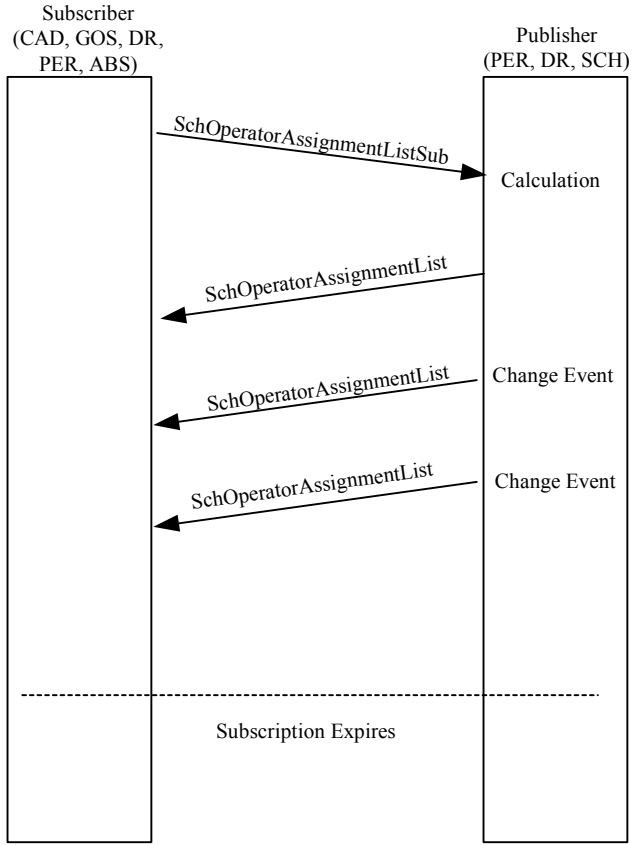
C. If the request is event-driven, the publisher provides updates as work assignments are bound to operators or changed.

3. The dialog ends after the publisher generates a CptSubErrorNotice for the subscription request or a SchOperatorAssignmentList in response to the request, if the subscription type is query. The dialog ends after the publisher generates a CptSubErrorNotice, or the subscription expires, or the subscriber sends a cancellation request if the subscription type is event-driven.

Message Sequence Diagram Page 2



Normal Execution of Query "Subscribe Operator Assignments" Subscription Dialog



Normal Execution of Event-Driven "Subscribe Operator Assignments" Subscription Dialog

TCIP Dialog Definition Page 3

Dialog Name: Subscribe Operator Assignments
Business Area: Sch
Dialog Pattern: Subscription

Message Name	Message Identifier	Role
SchOperatorAssignmentListSub	sch 2012	Request query or event-driven subscription, from the subscriber to the publisher.
SchOperatorAssignmentList	sch 2013	Provide subscribed operator assignment information from the publisher to the subscriber.
CptSubErrorNotice	cpt 2000	End the dialog with an error notification from the publisher to the subscriber.
SchOperatorAssignmentSub	sch 2012	Cancel and event-driven subscription from the subscriber to the publisher.

Notes:
Query-based subscriptions will normally be used to "pull-down" unbounded operator assignments, and event-driven subscriptions will normally be used to provide bounded operator assignments (due to the frequent changes), however the final decision on which subscription type to use for what interactions are based on agency architectures.

Subscribe Pattern List

TCIP Dialog Definition Page 1

Dialog Name: Subscribe Pattern List
Business Area: Sch
Dialog Pattern: Subscription

Purpose: Allows a subscriber to obtain pattern information for a specified pattern version number. The subscriber can determine the required pattern version number using the Subscribe Master Schedule Version dialog.

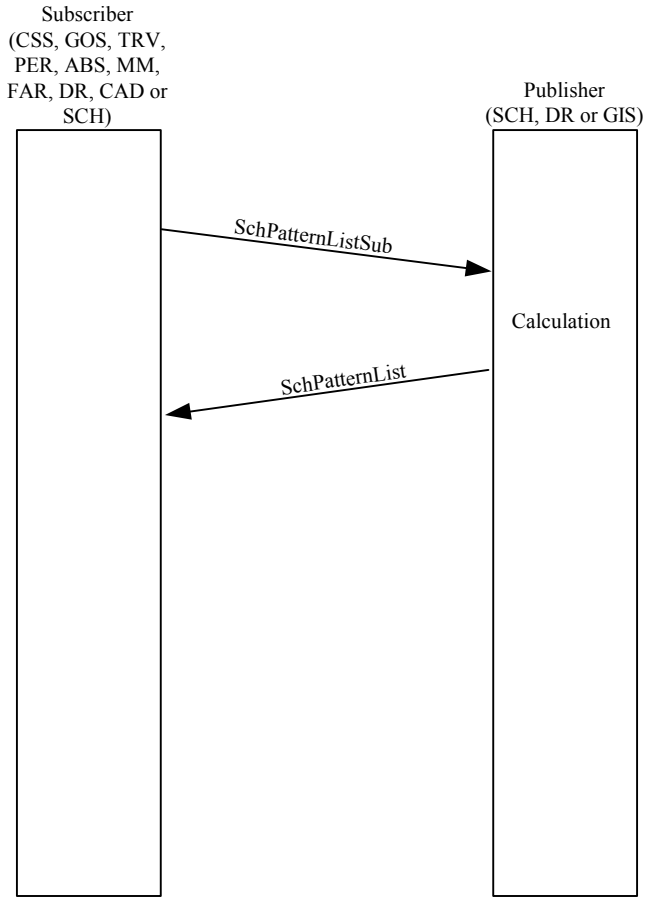
Assumptions:

1. This should be a query subscription. In the event that the subscriber needs to deal with schedule updates (version changes), the Subscribe Master Schedule Version dialog should be used to obtain notification of the availability of new schedule information (including pattern changes). Incremental (row) changes to a version can be obtained by querying for changes since the pattern list was last obtained for a given version number.
2. The publisher may be used with a Scheduling System (SCH), Data Repository (DR) or Geographical Information System (GIS).
3. The subscriber may be Customer Service System (CSS), Garage Operations System (GOS), Traveler Information System (TRV), Personnel Management System (PER), Authorized Business System (ABS), Maintenance Management System (MM), Fare System (FAR), Data Repository (DR), Cad/AVL System (CAD) or a Scheduling System (SCH).
4. TimePoint, and StopPoint information is necessary to interpret the pattern information properly. This information can be obtained using the Subscribe TimePoint List, and Subscribe StopPoint List dialogs.
5. This dialog may be used to request updates to a pattern list since a specified date/time, if the subscriber has previously obtained the complete pattern list with the specified version number ("Row Versioning").

Narrative:

1.The subscriber determines the version of the pattern list required. The Subscribe Master Schedule Version dialog facilitates this determination. The subscriber sends a SchPatternListSub message to the publisher with the subscription type indicating query.
2. The scheduling system (or alternate schedule repository) ("Publisher") validates the request and determines:
A. The request is invalid, unauthorized or cannot be serviced. The publisher then generates a CptSubErrorNotice to the subscriber and the dialog ends.
B. The request can be serviced. The publisher prepares a SchPatternList message in response to the subscription request.
3. The dialog ends after the publisher generates a CptSubErrorNotice for the subscription request, or a SchPatternList in response to the request.

Message Sequence Diagram Page 2



Normal Execution of Query "Subscribe Pattern List" Subscription Dialog

TCIIP Dialog Definition Page 3

Dialog Name: Subscribe Pattern List
Business Area: Sch
Dialog Pattern: Subscription

Message Name	Message Identifier	Role
SchPatternListSub	sch 2004	Request query subscription, from the subscriber to the publisher.
SchPatternList	sch 2005	Provide subscribed pattern information from the publisher to the subscriber.
CptSubErrorNotice	cpt 2000	End the dialog with an error notification from the publisher to the subscriber.

Notes:

Subscribe Pull In List (Deprecated)

TCIP Dialog Definition Page 1

Dialog Name: Subscribe Pull In List (Deprecated)
Business Area: Sch
Dialog Pattern: Subscription

Purpose: Allows a subscriber to obtain pull in information for a specified time interval for specified vehicles, routes, or garages.

Assumptions:

1. This should be a query subscription.
2. The publisher may be a Garage Operations System (GOS), Authorized Business System (ABS), Data Repository (DR).
3. The subscriber may be a Garage Operations System (GOS), Transit Employee Interface (TEI), or an Authorized Business System (ABS).

Narrative:

1.The subscriber determines the routes, vehicles, or garages required. The subscriber sends a SchPullInListSub message to the publisher with the subscription type indicating query.

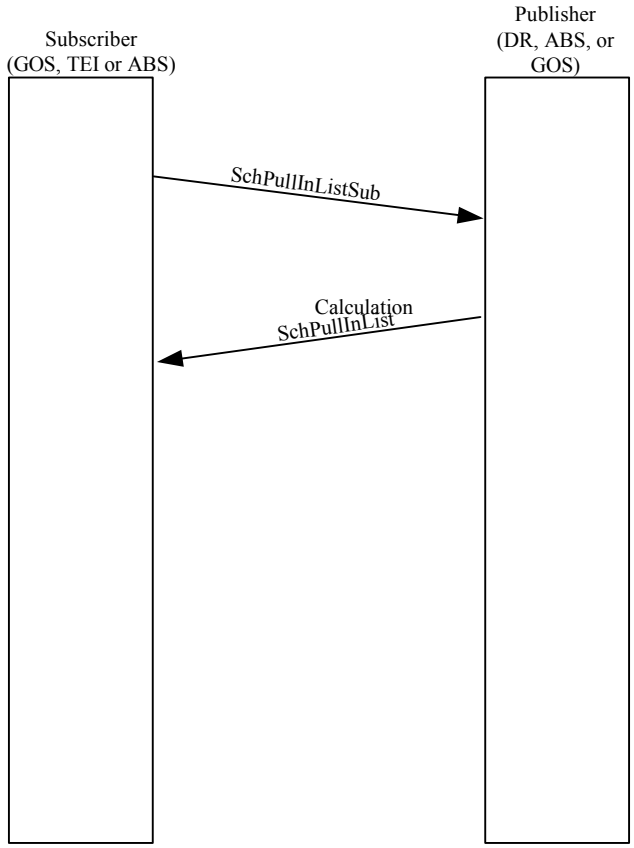
2. The scheduling system (or alternate schedule repository) ("Publisher") validates the request and determines:

A. The request is invalid, unauthorized or cannot be serviced. The publisher then generates a CptSubErrorNotice to the subscriber and the dialog ends.

B. The request can be serviced. The publisher prepares a SchPullInList message in response to the subscription request.

3. The dialog ends after the publisher generates a CptSubErrorNotice for the subscription request, or a SchPullInList in response to the request.

Message Sequence Diagram Page 2



Normal Execution of Query "Subscribe Pull In List" Subscription Dialog

TCIP Dialog Definition Page 3

Dialog Name: Subscribe Pull In List
Business Area: Sch
Dialog Pattern: Subscription

Message Name	Message Identifier	Role
SchPullInListSub	sch 2028	Request query subscription, from the subscriber to the publisher.
SchPullInList	sch 2029	Provide subscribed pull in information from the publisher to the subscriber.
CptSubErrorNotice	cpt 2000	End the dialog with an error notification from the publisher to the subscriber.

Notes:

Subscribe Pull Out List (Deprecated)

TCIP Dialog Definition Page 1

Dialog Name: Subscribe Pull Out List (Deprecated)

Business Area: Sch

Dialog Pattern: Subscription

Purpose: Allows a subscriber to obtain pull out information for a specified time interval for specified vehicles, routes, or garages.

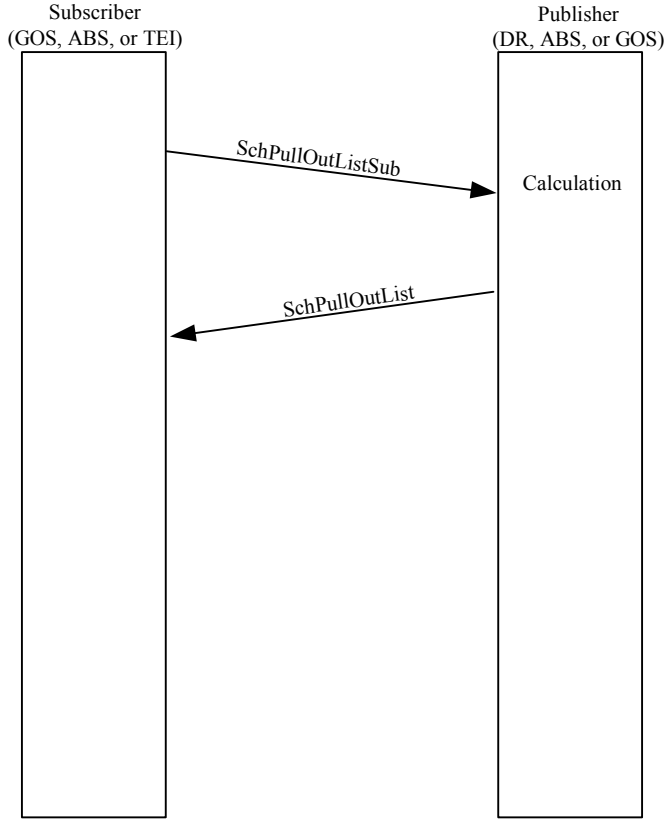
Assumptions:

1. This should be a query subscription.
2. The publisher may be Data Repository (DR), Authorized Business System (ABS), or a Garage Operations System (GOS).
3. The subscriber may be a Garage Operations System (GOS), Transit Employee Interface (TEI), or an Authorized Business System (ABS).

Narrative:

1.The subscriber determines the routes, vehicles, or garages required. The subscriber sends a SchPullOutListSub message to the publisher with the subscription type indicating query.
2. The scheduling system (or alternate schedule repository) ("Publisher") validates the request and determines:
A. The request is invalid, unauthorized or cannot be serviced. The publisher then generates a CptSubErrorNotice to the subscriber and the dialog ends.
B. The request can be serviced. The publisher prepares a SchPullOutList message in response to the subscription request.
3. The dialog ends after the publisher generates a CptSubErrorNotice for the subscription request, or a SchPullOutList in response to the request.

Message Sequence Diagram Page 2



Normal Execution of Query "Subscribe Pull Out List" Subscription Dialog

TCIP Dialog Definition Page 3

Dialog Name: Subscribe Pull Out List
Business Area: Sch
Dialog Pattern: Subscription

Message Name	Message Identifier	Role
SchPullOutListSub	sch 2026	Request query subscription, from the subscriber to the publisher.
SchPullOutList	sch 2027	Provide subscribed pull out information from the publisher to the subscriber.
CptSubErrorNotice	cpt 2000	End the dialog with an error notification from the publisher to the subscriber.

Notes:

Subscribe Roster

TCIP Dialog Definition Page 1

Dialog Name: Subscribe Roster
Business Area: SCH
Dialog Pattern: Subscription-Query

Purpose: Provide a list of operator assignments (runs) grouped into a weekly work package.

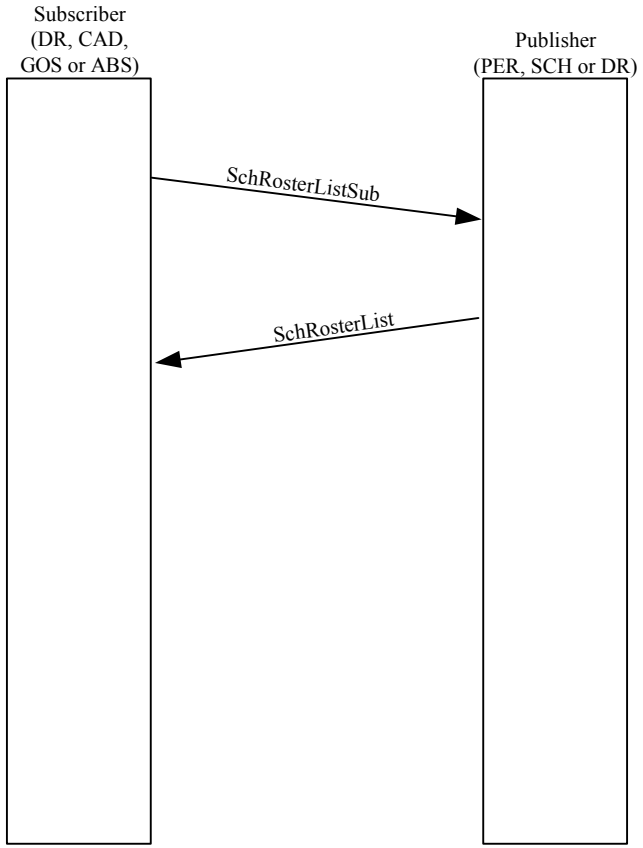
Assumptions:

1. Operator assignments are obtained separately using the "Subscribe Operator Assignments" dialog.
2. The subscription type is query.
3. The publisher may be a Scheduling System (SCH), Personnel Management System (PER) or a Data Repository (DR).
4. The subscriber may be a Data Repository (DR), CAD/AVL System (CAD), Garage Operations System (GOS) or an Authorized Business System (ABS).

Narrative:

1. The subscriber determines the rosters needed and sends a SchRosterListSub message to the publisher.
2. The publisher validates the request and determines:
    A. The request is invalid, unauthorized, or cannot be serviced. The publisher generates a CptSubErrorNotice to the subscriber and the dialog ends.
    B. The request can be partially serviced (not all requested routes, operators, or garages). The publisher downgrades the request and continues with C below.
    C. The request can be serviced. The publisher sends a SchRosterList message to the subscriber and the dialog ends.

Message Sequence Diagram Page 2



Normal Execution of Query "Subscribe Roster"

TCIP Dialog Definition Page 3

Dialog Name: Subscribe Roster
Business Area: SCH
Dialog Pattern: Subscription - Query

Message Name	Message Identifier	Role
SchRosterListSub	SCH 2030	Request a list of rosters for a specified list of routes, operators, garages, or all rosters.
SchRosterList	SCH 2031	Provide a list of rosters for a specified list of routes, operators, garages or all rosters.
CptSubErrorNotice	CPT 2000	End the dialog with an error notice from the publisher to the subscriber.

Notes:

Subscribe Route Schedule

TCIP Dialog Definition Page 1

Dialog Name: Subscribe Route Schedule

Business Area: Sch

Dialog Pattern: Subscription

Purpose: Allows a subscriber to obtain schedule information for a specified route and schedule version number. The subscriber can determine the appropriate version number for a route and day using the Subscribe Master Schedule Version dialog.

Assumptions:

1. This should be a query subscription. In the event that the subscriber needs to deal with schedule updates (version changes), the Subscribe Master Schedule Version dialog should be used to obtain notification of the availability of a complete new schedule version. Incremental changes (row changes) can be obtained by a query for updates since the last received update to a specified version.
2. Pattern, TimePoint, and StopPoint information is necessary to interpret the schedule information properly. This information can be obtained using the Subscribe Pattern List, Subscribe TimePoint List, and Subscribe StopPoint List dialogs.
3. Some subscribers require event information for trips (e.g. when bus signs should be changed, when announcements should be made), while others do not need this information. The include-events field in the SchRouteScheduleSub message indicates whether the SchRouteSchedule should include this information.
4. This dialog may be used to request update to a route schedule since a specified date/time, if the subscriber has previously obtained the complete route schedule with the specified version number.
5. The publisher may be a Scheduling System (SCH) or a Data Repository (DR).
6. The subscriber may be an Authorized Business System (ABS), Personnel Management System (PER), Fare System (FAR), Data Repository (DR), Customer Service System (CSS), Maintenance Management (MM), Traveler Information System (TRV) or Garage Operations System (GOS).

Narrative:

1.The subscriber determines the route and version of the schedule required. The Subscribe Master Schedule Version dialog facilitates this determination. The subscriber sends a SchRouteScheduleSub message to the publisher with the subscription type indicating query.

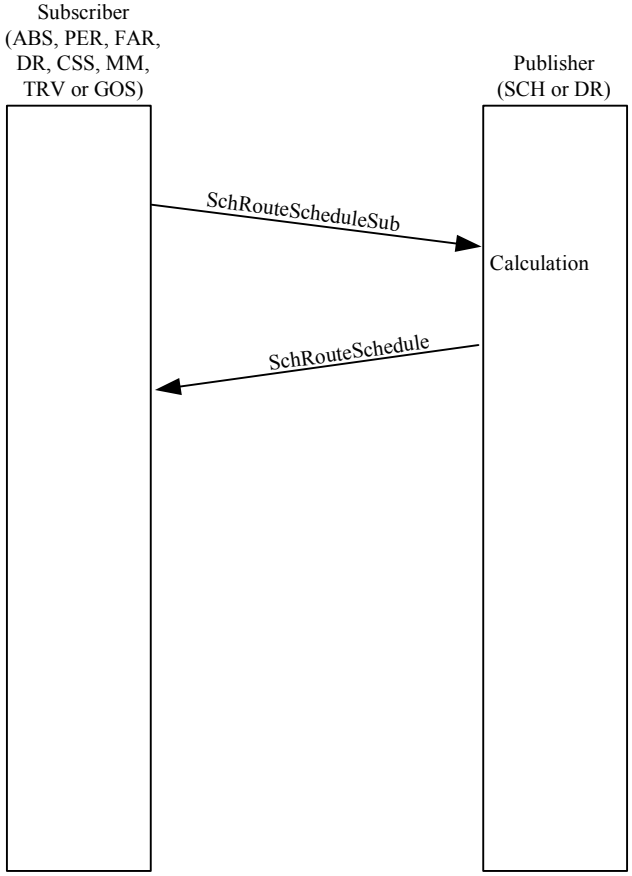
2. The scheduling system (or alternate schedule repository) ("Publisher") validates the request and determines:

A. The request is invalid, unauthorized or cannot be serviced. The publisher then generates a CptSubErrorNotice to the subscriber and the dialog ends.

B. The request can be serviced. The publisher prepares a SchRouteSchedule message in response to the subscription request.

3. The dialog ends after the publisher generates a CptSubErrorNotice for the subscription request, or a SchRouteSchedule in response to the request.

Message Sequence Diagram Page 2



Normal Execution of Query "Subscribe Route Schedule" Subscription Dialog

TCIP Dialog Definition Page 3

Dialog Name: Subscribe Route Schedule
Business Area: Sch
Dialog Pattern: Subscription

Message Name	Message Identifier	Role
SchRouteScheduleSub	sch 2002	Request query subscription, from the subscriber to the publisher.
SchRouteSchedule	sch 2003	Provide subscribed schedule information from the publisher to the subscriber.
CptSubErrorNotice	cpt 2000	End the dialog with an error notification from the publisher to the subscriber.

Notes:

Subscribe Stop Service

TCIP Dialog Definition Page 1

Dialog Name: Subscribe Stop Service
Business Area: Sch
Dialog Pattern: Subscription

Purpose: Allows a subscriber to obtain a list of the service at stops scheduled for a specified time interval for specified transit stop(s).

Assumptions:

1. This should be a query subscription.
2. The publisher may be a Data Repository (DR), or a Scheduling System (SCH).
3. The subscriber may be an Authorized Business System (ABS), Data Repository (DR), Traveler Information System (TRV), or a Customer Service System (CSS).

Narrative:

1.The subscriber determines the transit stops required. The subscriber sends a SchStopServiceListSub message to the publisher with the subscription type indicating query.

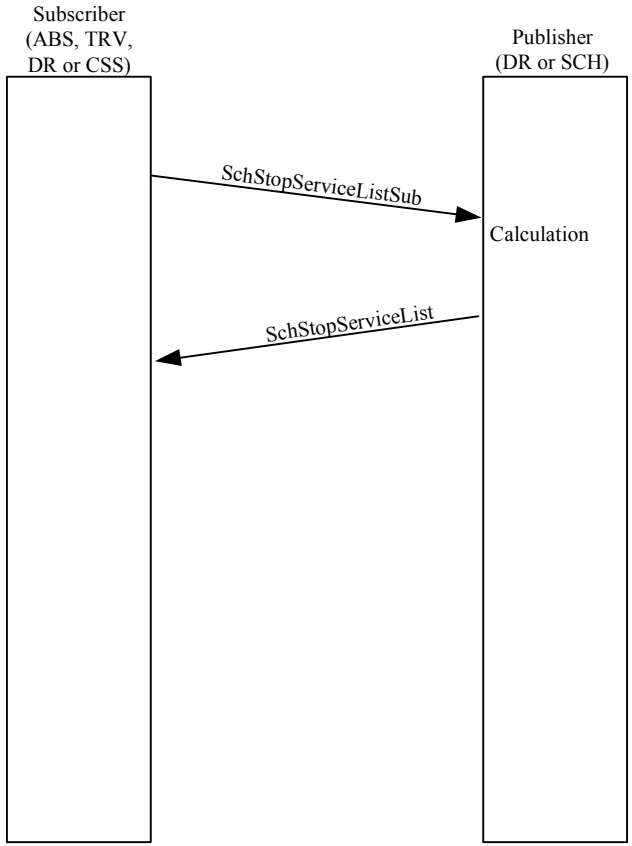
2. The scheduling system (or alternate schedule repository) ("Publisher") validates the request and determines:

A. The request is invalid, unauthorized or cannot be serviced. The publisher then generates a CptSubErrorNotice to the subscriber and the dialog ends.

B. The request can be serviced. The publisher prepares a SchStopServiceList message in response to the subscription request.

3. The dialog ends after the publisher generates a CptSubErrorNotice for the subscription request, or a SchStopServiceList in response to the request.

Message Sequence Diagram Page 2



Normal Execution of Query "Subscribe Stop Service" Subscription Dialog

TCIP Dialog Definition Page 3

Dialog Name: Subscribe Stop Service
Business Area: Sch
Dialog Pattern: Subscription

Message Name	Message Identifier	Role
SchStopServiceListSub	sch 2014	Request query subscription, from the subscriber to the publisher.
SchStopServiceList	sch 2015	Provide subscribed stop service information from the publisher to the subscriber.
CptSubErrorNotice	cpt 2000	End the dialog with an error notification from the publisher to the subscriber.

Notes:

Subscribe Timepoint List

TCIP Dialog Definition Page 1

Dialog Name: Subscribe Timepoint List

Business Area: Sch

Dialog Pattern: Subscription

Purpose: Allows a subscriber to obtain timepoint information for a specified timepoint version number. The subscriber can determine the required timepoint version number using the Subscribe Master Schedule Version dialog.

Assumptions:

1. This should be a query subscription. In the event that the subscriber needs to deal with schedule updates (version changes), the Subscribe Master Schedule Version dialog should be used to obtain notification of the availability of a complete new schedule version. Incremental changes (row changes) can be obtained by a query for updates since the last received update to a specified version.
2. The dialog may be used to request updates to a timepoint list since a specified date/time if the subscriber has previously obtained the complete timepoint list with the specified version number.
3. The publisher may be a Scheduling System (SCH), Data Repository (DR) or a Geographic Information System (GIS).
4. The subscriber may be an Authorized Business System (ABS), Garage Operations System (GOS), Personnel Management System (PER), Traveler Information System (TRV), Maintenance Management System (MM), Data Repository (DR), Fare System (FAR), Customer Service System (CSS) or a CAD/AVL System (CAD).

Narrative:

1.The subscriber determines the version of the timepoints required. The Subscribe Master Schedule Version dialog facilitates this determination. The subscriber sends a SchTimepointListSub message to the publisher with the subscription type indicating query.

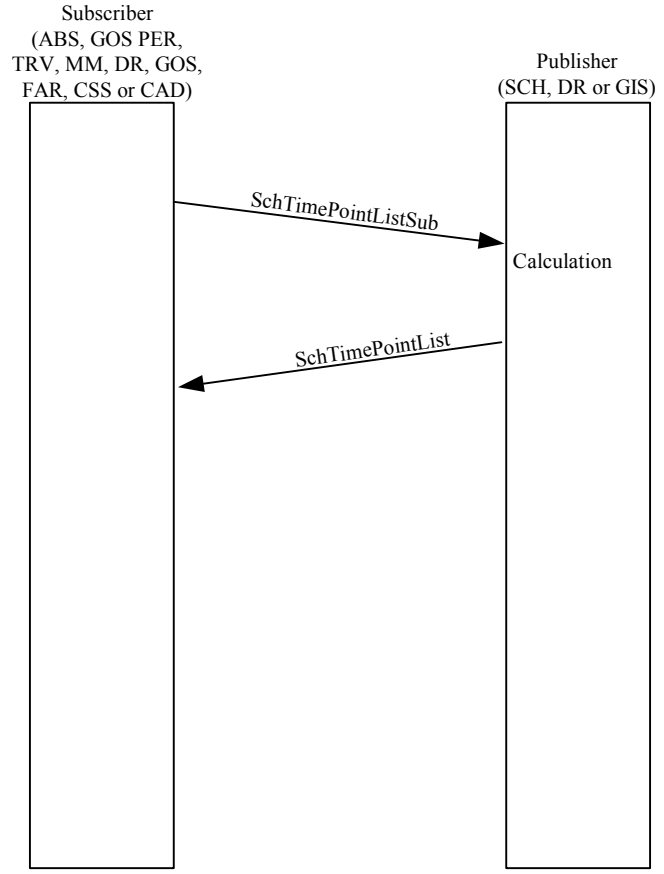
2. The scheduling system (or alternate schedule repository) ("Publisher") validates the request and determines:

A. The request is invalid, unauthorized or cannot be serviced. The publisher then generates a CptSubErrorNotice to the subscriber and the dialog ends.

B. The request can be serviced. The publisher prepares a SchTimepointList message in response to the subscription request.

3. The dialog ends after the publisher generates a CptSubErrorNotice for the subscription request, or a SchTimepointList in response to the request.

Message Sequence Diagram Page 2



Normal Execution of Query "Subscribe Timepoint List" Subscription Dialog

TCIP Dialog Definition Page 3

Dialog Name: Subscribe Timepoint List
Business Area: Sch
Dialog Pattern: Subscription

Message Name	Message Identifier	Role
SchTimepointListSub	sch 2006	Request query subscription, from the subscriber to the publisher.
SchTimepointList	sch 2007	Provide subscribed timepoint information from the publisher to the subscriber.
CptSubErrorNotice	cpt 2000	End the dialog with an error notification from the publisher to the subscriber.

Notes:

Subscribe Transfers

TCIP Dialog Definition Page 1

Dialog Name: Subscribe Transfers

Business Area: Sch

Dialog Pattern: Subscription

Purpose: Allows a subscriber to obtain a list of the transfers scheduled for a specified time interval for specified transit stop(s) routes, or route pairs.

Assumptions:

1. This should be a query subscription.
2. This dialog may be used to query for updates to a previously obtained transfer list.
3. The publisher may be a Data Repository (DR) or a Scheduling System (SCH).
4. The subscriber may be a Traveler Information System (TRV), Fare System (FAR), Authorized Business System (ABS), Customer Service System (CSS), Data Repository (DR) or a CAD/AVL System (CAD).

Narrative:

1.The subscriber determines the transit stops, routes, or route pairs of interest. The subscriber sends a SchTransferListSub message to the publisher with the subscription type indicating query.

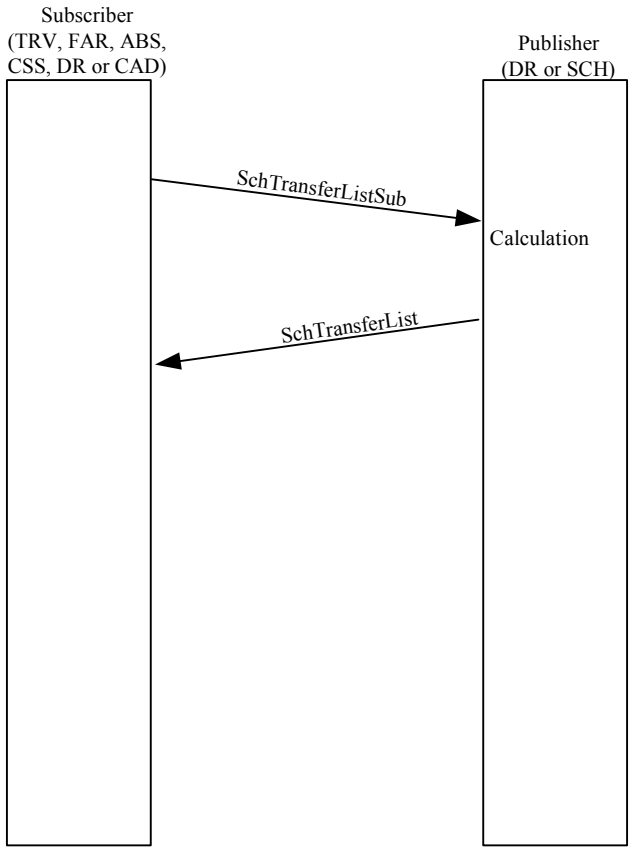
2. The scheduling system (or alternate schedule repository) ("Publisher") validates the request and determines:

A. The request is invalid, unauthorized or cannot be serviced. The publisher then generates a CptSubErrorNotice to the subscriber and the dialog ends.

B. The request can be serviced. The publisher prepares a SchTransferList message in response to the subscription request.

3. The dialog ends after the publisher generates a CptSubErrorNotice for the subscription request, or a SchTransferList in response to the request.

Message Sequence Diagram Page 2



Normal Execution of Query "Subscribe Transfers" Subscription Dialog

TCIP Dialog Definition Page 3

Dialog Name: Subscribe Transfers
Business Area: Sch
Dialog Pattern: Subscription

Message Name	Message Identifier	Role
SchTransferListSub	sch 2020	Request query subscription, from the subscriber to the publisher.
SchTransferList	sch 2021	Provide subscribed stop service information from the publisher to the subscriber.
CptSubErrorNotice	cpt 2000	End the dialog with an error notification from the publisher to the subscriber.

Notes:

Subscribe Trip Detail

TCIP Dialog Definition Page 1

Dialog Name: Subscribe Trip Detail

Business Area: Sch

Dialog Pattern: Subscription

Purpose: Allows a subscriber to obtain detailed trip information for a specified time interval for specified trips, routes, timepoints, or stoppoints.

Assumptions:

1. This should be a query subscription.
2. The publisher may be a Data Repository (DR) or a Scheduling System (SCH).
3. The subscriber may be a Traveler Information System (TRV), Authorized Business System (ABS), Data Repository (DR) or a Customer Service System (CSS).

Narrative:

1.The subscriber determines the routes, trips, timepoints, or stoppoints required. The subscriber sends a SchTripDetailListSub message to the publisher with the subscription type indicating query.

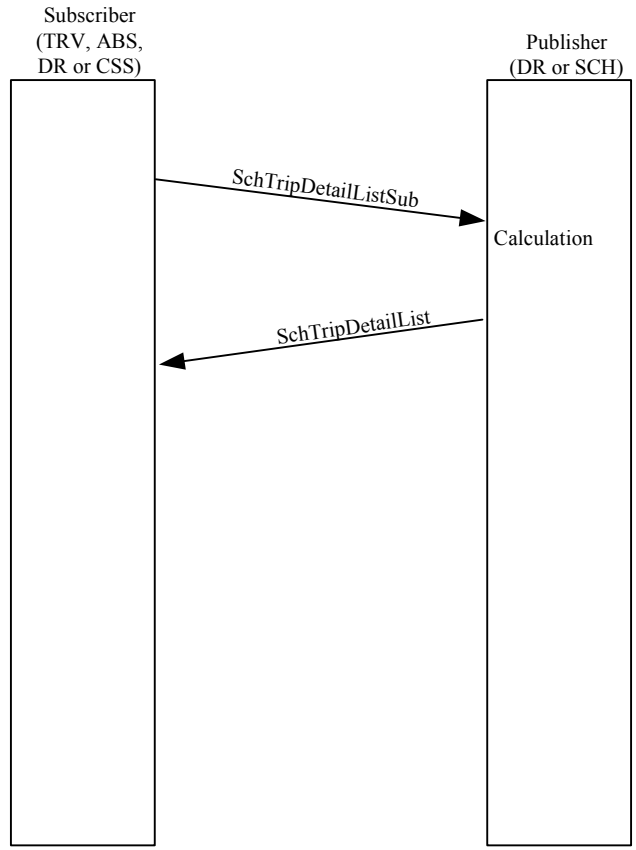
2. The scheduling system (or alternate schedule repository) ("Publisher") validates the request and determines:

A. The request is invalid, unauthorized or cannot be serviced. The publisher then generates a CptSubErrorNotice to the subscriber and the dialog ends.

B. The request can be serviced. The publisher prepares a SchTripDetailList message in response to the subscription request.

3. The dialog ends after the publisher generates a CptSubErrorNotice for the subscription request, or a SchTripDetailList in response to the request.

Message Sequence Diagram Page 2



Normal Execution of Query "Subscribe Trip Detail" Subscription Dialog

TCIP Dialog Definition Page 3

Dialog Name: Subscribe Trip Detail
Business Area: Sch
Dialog Pattern: Subscription

Message Name	Message Identifier	Role
SchTripDetailListSub	sch 2018	Request query subscription, from the subscriber to the publisher.
SchTripDetailList	sch 2019	Provide subscribed trip detail information from the publisher to the subscriber.
CptSubErrorNotice	cpt 2000	End the dialog with an error notification from the publisher to the subscriber.

Notes:

Subscribe Unassigned Operators (Deprecated)

TCIP Dialog Definition Page 1

Dialog Name: Subscribe Unassigned Operators (Deprecated)

Business Area: Sch

Dialog Pattern: Subscription

Purpose: Allows a subscriber to obtain a list of unassigned operators for a specified time interval for specified operators, routes or bases. The subscriber can obtain a list of all unassigned operators for the specified by not specifying a list of operators, garages, or routes.

Client

Assumptions:

1. This should be a query or event subscription.
2. This dialog may be used with a schedule repository (other than the scheduling/runcutting system) as the publisher.
3. The publisher may be a Personnel Management System (PER), or a Data Repository (DR).
4. The subscriber may be Garage Operations System (GOS), CAD/AVL System (CAD), Transit Employee Interface (TEI), Data Repository (DR), or an Authorized Business System (ABS).

Narrative:

1.The subscriber determines the operators, garages, routes, required (or all). The subscriber sends a SchUnassignedOperatorListSub message to the publisher with the subscription type indicating query or event.

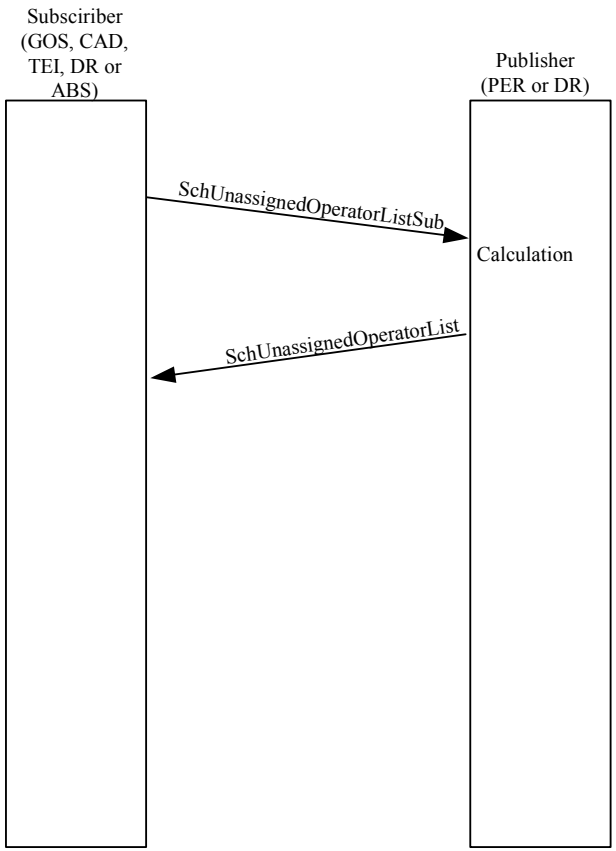
2. The scheduling system (or alternate schedule repository) ("Publisher") validates the request and determines:

A. The request is invalid, unauthorized or cannot be serviced. The publisher then generates a CptSubErrorNotice to the subscriber and the dialog ends.

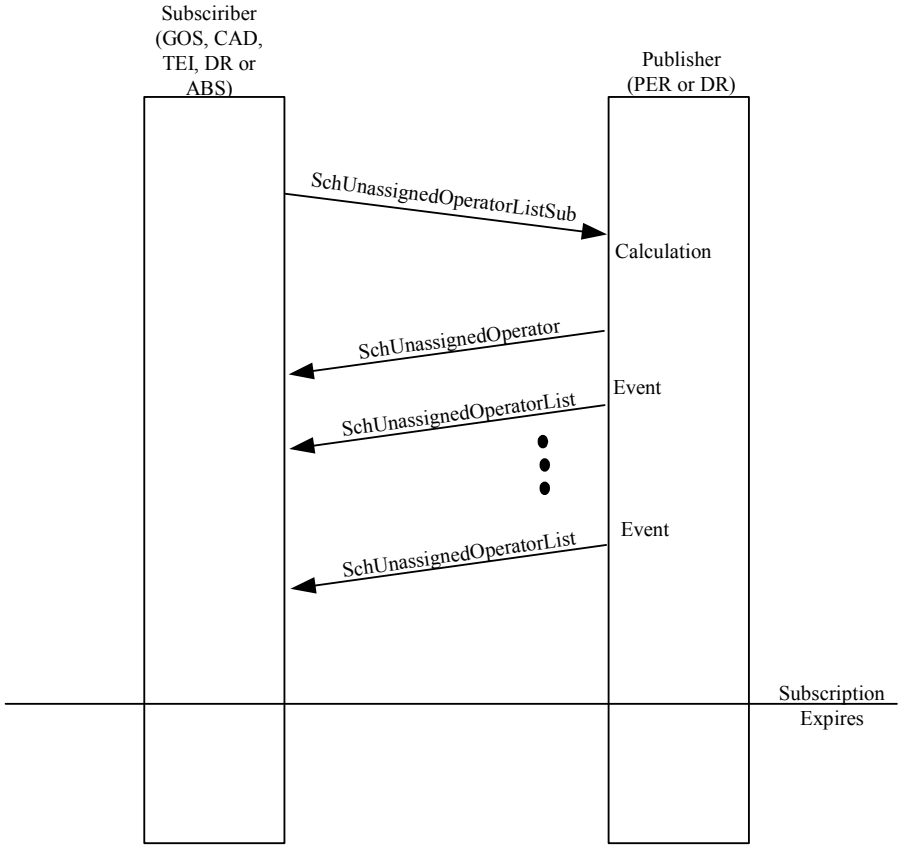
B. The request can be serviced. The publisher prepares a SchUnassignedOperatorList message in response to the subscription request.

3. The dialog ends after the publisher generates a CptSubErrorNotice for the subscription request, or a SchUnassignedOperatorList in response to the request.

Message Sequence Diagram Page 2



Normal Execution of Query "Subscribe Unassigned Operators" Subscription Dialog



Normal Execution of Query "Subscribe Unassigned Operators" Subscription Dialog

TCIP Dialog Definition Page 3

Dialog Name: Subscribe Unassigned Operators
Business Area: Sch
Dialog Pattern: Subscription

Message Name	Message Identifier	Role
SchUnassignedOperatorListSub	sch 2024	Request unassigned operator information, from the subscriber to the publisher.
SchUnassignedOperatorList	sch 2025	Provide subscribed operator assignment information from the publisher to the subscriber.
CptSubErrorNotice	cpt 2000	End the dialog with an error notification from the publisher to the subscriber.

Notes:

Subscribe Unassigned Vehicles (Deprecated)

TCIP Dialog Definition Page 1

Dialog Name: Subscribe Unassigned Vehicles

Business Area: Sch

Dialog Pattern: Subscription

Purpose: Allows a subscriber to obtain a list of unassigned Vehicles for a specified time interval for specified vehicles, vehicle types, vehicle-attributes, or garages. The subscriber can obtain a list of all unassigned vehicles for the specified interval by not specifying a list of vehicles, vehicle types, vehicle attributes, or garages.

Assumptions:

1. This should be a query subscription.
2. The publisher may be a Data Repository (DR), Maintenance Management System (MM), Garage Operations System (GOS).
3. The subscriber may be Garage Operations System (GOS). Authorized Business System (ABS), Data Repository (DR), or a Maintenance Management System (MM).

Narrative:

1.The subscriber determines the vehicles, vehicle attributes, vehicle types or garages required (or all). The subscriber sends a SchUnassignedVehicleListSub message to the publisher with the subscription type indicating query.

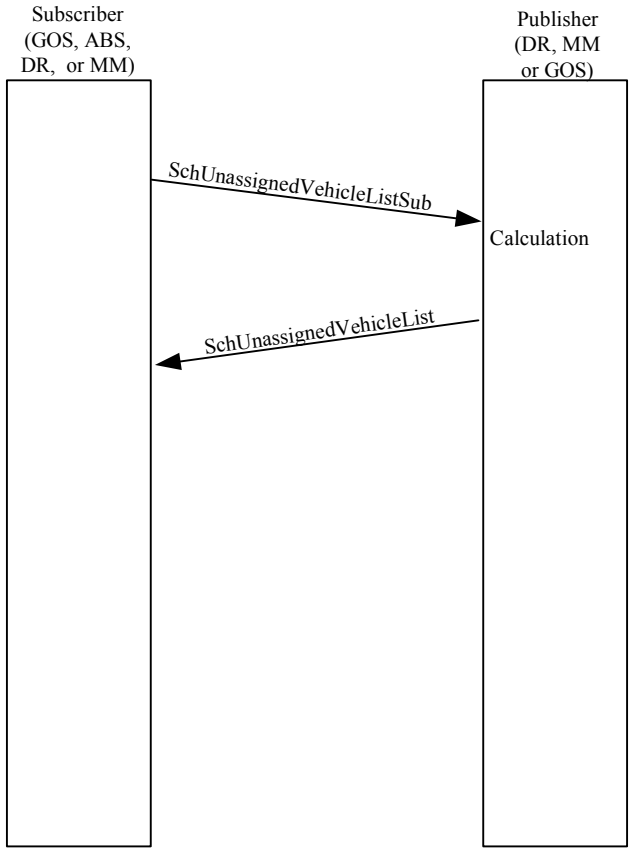
2. The scheduling system (or alternate schedule repository) ("Publisher") validates the request and determines:

A. The request is invalid, unauthorized or cannot be serviced. The publisher then generates a CptSubErrorNotice to the subscriber and the dialog ends.

B. The request can be serviced. The publisher prepares a SchUnassignedVehicleList message in response to the subscription request.

3. The dialog ends after the publisher generates a CptSubErrorNotice for the subscription request, or a SchUnassignedVehicleList in response to the request.

Message Sequence Diagram Page 2



Normal Execution of Query "Subscribe Unassigned Vehicle"

TCIP Dialog Definition Page 3

Dialog Name: Subscribe Unassigned Vehicles
Business Area: Sch
Dialog Pattern: Subscription

Message Name	Message Identifier	Role
SchUnassignedVehicleListSub	sch 2022	Request query subscription, from the subscriber to the publisher.
SchUnassignedVehicleList	sch 2023	Provide subscribed vehicle assignment information from the publisher to the subscriber.
CptSubErrorNotice	cpt 2000	End the dialog with an error notification from the publisher to the subscriber.

Notes:

Subscribe Vehicle Assignments

TCIP Dialog Definition Page 1

Dialog Name: Subscribe Vehicle Assignments

Business Area: Sch

Dialog Pattern: Subscription

Purpose: Allows a subscriber to obtain vehicle assignments for a specified time interval for specified vehicles, routes or garages. The subscriber can obtain assignments for the specified interval for all vehicles by not specifying a list of vehicles, garages, or routes. Work assignments may be "unbound" (no vehicle assigned to the work) or "bound" (with specific vehicle(s) assigned).

Assumptions:

1. This may be a query or an event-driven subscription.
2. The publisher may be a Data Repository (DR), Scheduling System (SCH), or a Garage Operations System (GOS).
3. The subscriber may be a Maintenance Management System (MM), Garage Operations System (GOS), Data Repository (DR), Authorized Business System (ABS) or CAD/AVL System (CAD).
4. The update since field in the SchVehicleAssignment and the SchVehicleAssignmentListSub message can be used to request and obtain updates since a specific date-time. In the event-driven case, the publisher has the option to send updates only after sending the initial list.

Narrative:

1.The subscriber determines the vehicles, garages routes, required (or all). The subscriber sends a SchVehicleAssignmentListSub message to the publisher with the subscription type indicating query, or event-driven.

2. The scheduling system (or alternate schedule repository) ("Publisher") validates the request and determines:

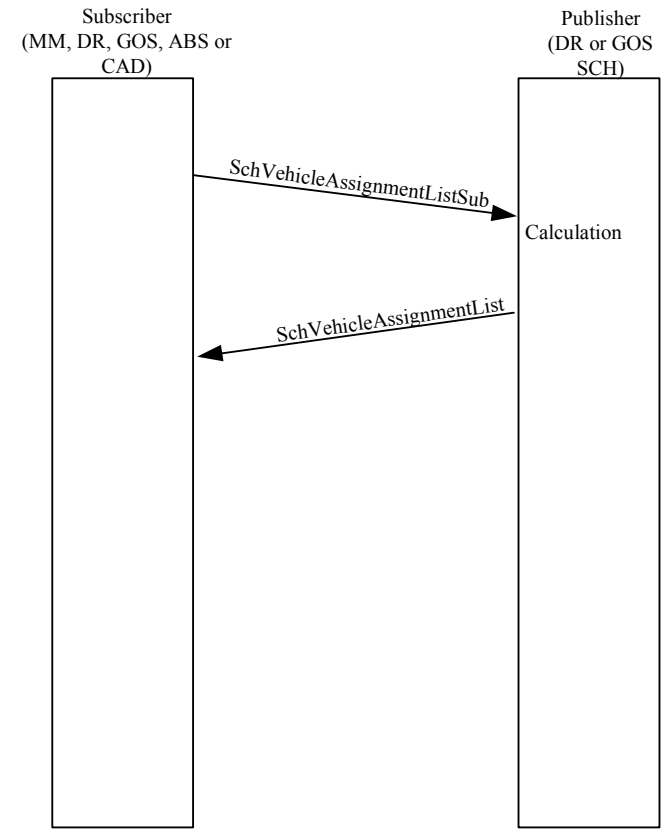
A. The request is invalid, unauthorized or cannot be serviced. The publisher then generates a CptSubErrorNotice to the subscriber and the dialog ends.

B. The request can be serviced. The publisher prepares a SchVehicleAssignmentList message in response to the subscription request.

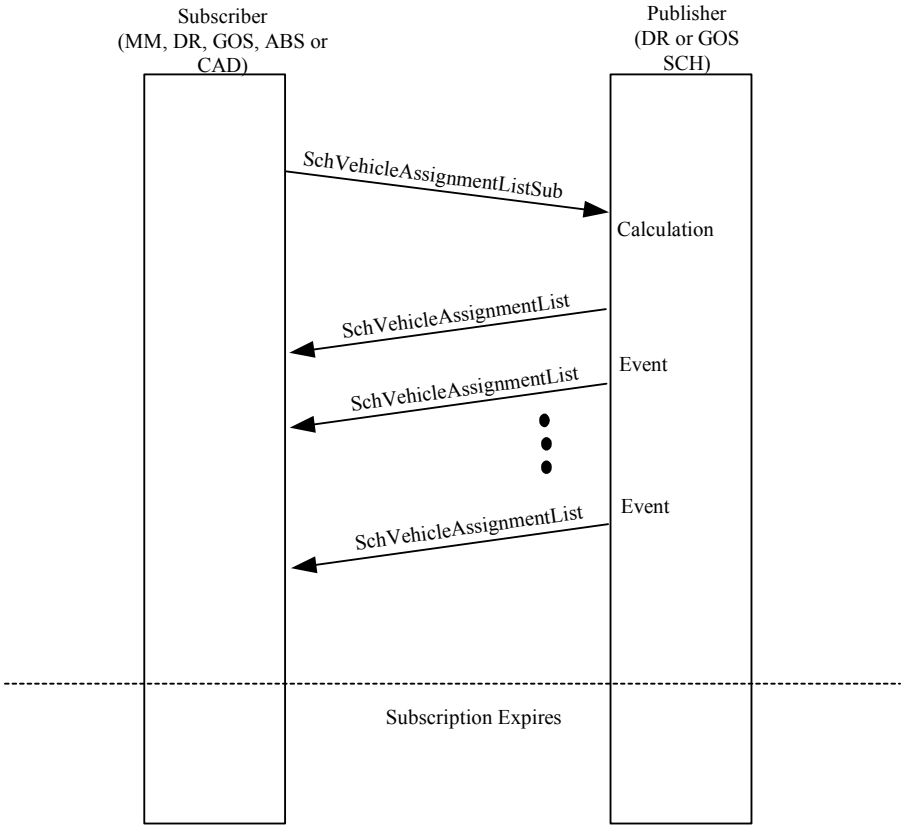
C. If the request is event-driven, the publisher provides updates as the work assignments are bound to vehicles or changed.

3. The dialog ends after the publisher generates a CptSubErrorNotice for the subscription request, or a SchVehicleAssignmentList in response to the request, if the subscription type is query. The dialog ends after the publisher generates a CptSubErrorNotice, or the subscription expires, or the subscriber sends a cancellation request if the subscription type is event-driven.

Message Sequence Diagram Page 2



Normal Execution of Query "Subscribe Vehicle Assignment" Subscription Dialog



Normal Execution of Event-Driven "Subscribe Vehicle Assignments" Subscription Dialog

TCIP Dialog Definition Page 3

Dialog Name: Subscribe Vehicle Assignments
Business Area: Sch
Dialog Pattern: Subscription

Message Name	Message Identifier	Role
SchVehicleAssignmentListSub	sch 2010	Request query subscription, from the subscriber to the publisher.
SchVehicleAssignmentList	sch 2011	Provide subscribed vehicle assignment information from the publisher to the subscriber.
CptSubErrorNotice	cpt 2000	End the dialog with an error notification from the publisher to the subscriber.
SchVehicleAssignmentSub	sch2010	Cancel an event-driven subscription from the subscriber to the publisher.

Notes:
Query-based subscriptions will normally be used to "pull down" unbounded vehicle assignments, and event-driven subscriptions will normally be used to provide bounded vehicle assignments (due to frequent changes), however the final decision on which subscription type to use for what interactions are based on agency architectures.

Report Schedule Validation Error

TCIP Dialog Definition Page 1

Dialog Name: Report Schedule Validation Error
Business Area: Sch
Dialog Pattern: Report

Purpose: Notify a data repository, scheduling system, or other agency-specified business system receiver of a schedule validation failure.

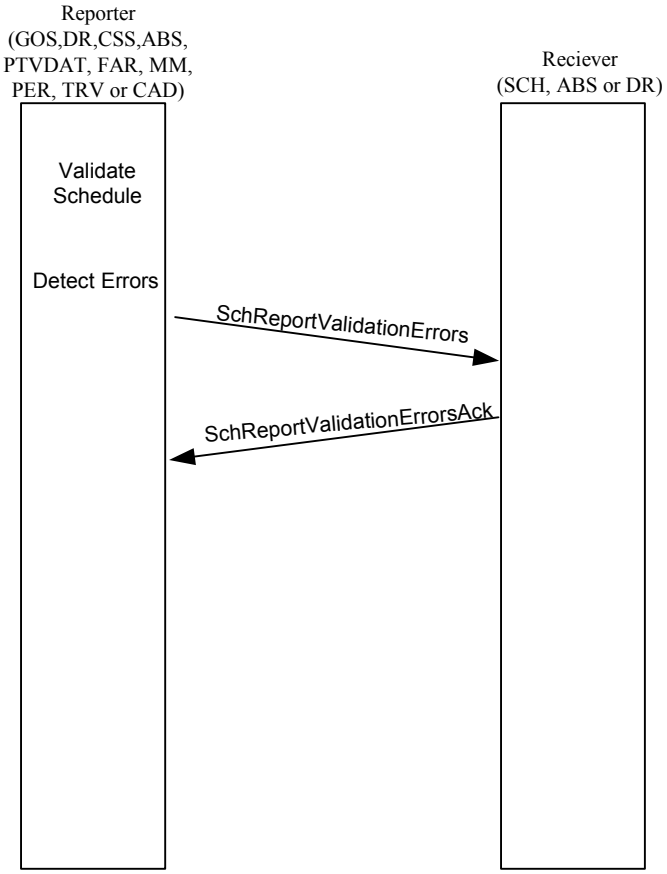
Assumptions:

1. Used by a schedule consumer application to report a defect in a schedule.
2. The reporter may be a Garage Operations System (GOS), Data Repository (DR), Customer Service System (CSS), Authorized Business System (ABS), PTV Manage VLU Data (PTVDAT), Fare System (FAR), Maintenance Management System (MM), Personnel Management System (PER), Traveler Information System (TRV) or a CAD/AVL System (CAD).
3. The receiver may be a Scheduling System (SCH), Authorized Business System (ABS) or a Data Repository (DR).

Narrative:

1. The schedule consumer application validates the schedule in preparation for use and detects one or more errors.
2. The schedule consumer application (reporter) sends a SchReportValidationErrors message to the agency-specified business system (receiver).
3. The receiver sends a SchReportValidationErrorsAck message to the reporter.
4. The dialog ends.

Message Sequence Diagram Page 2



Normal Execution of the "Report Schedule Validation Error" Dialog

TCIP Dialog Definition Page 3

Dialog Name: Report Schedule Validation Error
Business Area: Sch
Dialog Pattern: Report

Message Name	Message Identifier	Role
SchReportValidationErrors	Sch 2038	Report that a schedule is invalid.
SchReportValidationErrorsAck	Sch 2039	Acknowledge the report of an invalid schedule.

Notes:

Subscribe Running Times

TCIP Dialog Definition Page 1

Dialog Name: Subscribe Running Times
Business Area: Sch
Dialog Pattern: Subscription-Query

Purpose: Provides an authorized subscriber with the scheduled or expected running times for a route or part of a route.

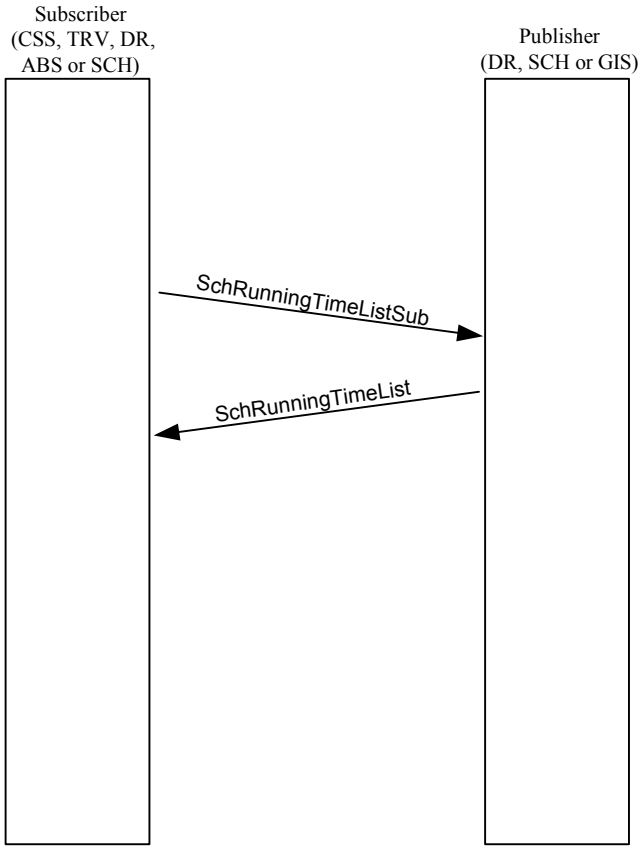
Assumptions:

1. The publisher may be a Data Repository (DR), Scheduling System (SCH) or Geographical Information System (GIS).
2. The subscriber may be Customer Service System (CSS), Traveler Information System (TRV), Data Repository (DR), Authorized Business System (ABS) or Scheduling System (SCH).

Narrative:

1. The subscriber determines the routes, patterns, pattern segments, timepoint pairs or stoppoint pairs of interest and sends a SchRunningTimeListSub message to the publisher.
2. The publisher validates the message and determines:
    a. The request is invalid or from an unauthorized user. The publisher sends a CptSubErrorNotice to the subscriber and the dialog ends.
    b. The request is valid and the subscriber is authorized. The publisher sends a SchRunningTimeList message to the subscriber and the dialog ends.

Message Sequence Diagram Page 2



Normal Execution of the "Subscribe Running Times" Dialog

TCIP Dialog Definition Page 3

Dialog Name: Subscribe Running Times
Business Area: Sch
Dialog Pattern: Subscription-Query

Message Name	Message Identifier	Role
SchRunningTimeListSub	Sch 2040	Request running times for pair(s) of points on transit routes.
SchRunnintTimeList	Sch 2041	Provide scheduled or expected running times.
CptSubErrorNotice	Cpt 2000	Notify the subscriber of an error in subscription request.

Notes: