PC HotShots, Inc.

1728 Gablehammer Rd
Westminster, MD 21157

Voice: (410) 848-0588   gdobson@pchotshots.com
Fax: (410) 848-0533   pchotshots@compuserve.com

3-15-04 – new version of the gateway using XML style formatting
*1/09/05 – Field Name Change for DoseTimes to DoseTimesQtys on Rx table

Sep 15, 2010

Re: Real Time Gateway to Medicine on Time for Windows

This document contains the XML table formats and descriptions as accepted by the Medicine-On-Time for Windows Gateway. We would like your system to send all relevant data for our tables. Further description of the proposed interface functionality is on the next page.

- ⑤ All dates must be in the format CCYY-MM-DD.
- ⑤ All numeric values are sent as ASCII formatted strings. (ie: 1.25, human readable, not binary)
- ⑤ If a value can contain a decimal point, it is required to be present for the value to be accepted (1.00 is acceptable, 100 with an assumed decimal of 2 places is not)
- ⑤ A 'K' in the Required column of the table description denotes the field as a Key field, and is required for all functions.
- ⑤ An 'A' in the Required column denotes the field as required on 'Add' records
- ⑤ A 'W' in the Required column denotes the field as "would like to have" if possible, but not necessary
- ⑤ A 'C' in the Required column denotes the field as required on 'Change' records
- ⑤ All phone numbers are formatted such that they are 10 characters long, left filling spaces if no area code is present
- ⑤ All column lengths are the maximum length for the column, data should only be as long as necessary with no padding (other than phone number padding detailed above)

If the TCP/IP connection is unavailable, the prescription system should periodically retry until it connects, or a fixed number of retries has been attained, in which case the user should be notified. If possible, keep all gateway records on hold until such time as the interface is back up, ~~or the data can be written to a file for the user to manually load into the gateway program~~ (this option currently only applies to the old delimited format).

The Gateway is designed to be used with triggers (or trigger points) within the Rx system, when a user adds or updates a record. The trigger should send the new or updated information to the MOT Gateway. On a Change record, only the changed fields (plus the key fields) should be sent. On an Add record, all possible fields should be sent. If you have no way to tell what fields have changed, it is acceptable to send the full field list of the record for each change.

We are assuming an initial data dump from the Rx system to the Gateway machine, to initialize the underlying data. This is to prevent future changes to a patient, or a new rx for a patient, from causing a new patient record to be created because the RxSystem.Patient ID was missing or different in the currently existing MOT patient data. The initial data dump can be done in one of these two ways:

1. As a file, in the format as described herein for each record type in TEXT file format with each record ended by a CRLF, and formatted as described later. See Page 8 for more detail.
2. Via the TCP/IP connection discussed in this document.

Let us bring out the power of your PCs

TCP/IP Transfer Format

Using the structures as given below, we need to have the data come over in a serial stream via TCP/IP port 24042 (and is configurable on our end). Data will appear as an XML data stream. Total amount of data sent over the connection will be significantly higher than v1 was, but allows for more flexible coding when it comes to sending the data. Fields not sent will default to empty for new records, as specified in the field details, or unchanged for existing records. Field orders are not fixed, so any given tag may appear anywhere in the data, as long as it's between <record></record> tags. Tag names are case insensitive, but data within a tag will be left unchanged. This is not a true XML implementation and as such, extra (unknown) tags that appear outside of known tags will be ignored, and tags within a known tag will be included as text verbatim. The tags are as follows, details on each describe where needed.

one individual item to be processed
<table></table>   Table Identifier (see table below)
Action Identifier (see table below)
<"fieldname"></"fieldname"> This will be the name of a field as it appears in the table listings on the following page.

Table Identifiers	Actions
Prescriber	Add
Drug	Change
Location	Delete
Patient	
Rx	
TimesQtys	
Store	

On any field that becomes blank (i.e.: Patient Middle initial was removed) the field that shows up on our end will appear like <middleinitial></middleinitial>, with NO contents at all. When a field is not present in the data sent, its original contents in our database will remain unchanged

All numeric fields will be sent as an ASCII string, with decimal places as required. Do NOT pad fields to their maximum length, this just slows the transmission process.

The gateway program does not actually process the data at the same time it receives it. The receiver and processor are two separate functions of the gateway program. This is done to keep from slowing down the rx system while our side is processing data, and it allows us to keep the records (in a database table) and play them back at a later time for diagnosis if the user has any problems. The system defaults to keeping the most recent 2 weeks of data).

Sample Data Conversation:
Connect to address:port xx on MOT Data Gateway (address:port may vary by site)

Sent by Rx System:
<record><table>Prescriber</table><action>Add</action><rxsys_docid>KE1</rxsys_docid>
<LastName>Kevorkian</LastName><FirstName>Edward</FirstName>
<address1>1313 Mockingbird Heights Ave</address1><address2>Apt. 13d</address2>
<City>Baltimore</city><state>MD</state><zip>21206</zip><phone>4108444444</phone>
<dea>KB12345678</dea></record>

Reply from MOT:
ACK

REPEAT FROM "Sent By" FOR EACH RECORD

Prescription System:
<EOF/>

Reply from MOT:
ACK

Prescription System can now disconnect safely (or leave the connection open for future records).

If your system is simply going to maintain a connection and not disconnect, just don't send a <EOF/> and we will continue waiting for new <record></record> pairs to show up to be submitted to the data processor.

The ACK and NAK are configurable so that they can be a single error value (NAK), one of a list of error codes, or a variable length error string.

Success:
        Single byte: ACK = \x06
OR
        As Text: "Ok\x0D"

Failure:
        Single byte: NAK = \x15
Byte Code:
        \x0A = invalid table type
        \x0B = invalid process type
        \x0C = missing <record> tags
        \x0D = no data between <record> and </record>
OR
        As variable length Text: "Error – Missing key fields\x0D" (will always begin with "Error" and end with "\x0D")

Table: Prescriber

Field Name	Required	Type	Max Len	Comments
1. RxSys_DocID	K	char	10	Rx system unique doctor identifier – this is the unique field that identifies the doctor in the MOT system it is **REQUIRED**
2. LastName	A	char	30	
3. FirstName	A	char	20	
4. MiddleInitial		char	2	Room for 2 characters. Should NOT have a period if only 1 letter (the "." is auto added during report generation)
5. Address1	W	char	40	
6. Address2	W	char	40	
7. City	W	char	30	
8. State	W	char	2	2 char abbrev, all upper
9. Zip	W	char	9	Zip Code + 4 - no "-" character
10. Phone	W	char	10	
11. Comments		char	32767	Any other miscellaneous info you want to keep
12. DEA_ID	W	char	10	Does not contain "-" character
13. TPID		char	10	
14. Specialty		numeric		Range is 0 to 18, Links to our specialty table. 0 is Family Practice. Table can be furnished if desired
15. Fax	W	char	10	
16. PagerInfo		char	40	notes for pager #, pager id, whatever

Table: Drug

	Field Name	Required	Type	Max Len	Comments
1.	RxSys_DrugID	K	char	11	**Unique** identifier for drug in Rx system, **REQUIRED**
2.	LblCode		char	6	FDA Labeler code, prefilled for FDA loaded data
3.	ProdCode		char	4	Ditto LblCode
4.	Tradename		char	100	trade name of drug
5.	Strength		char	10	Free form character field. Usually a number (i.e.: 500)
6.	Unit		char	10	Type of strength (i.e.: MG)
7.	RxOtc		char	1	R or O depending on whether the Drug is Prescription or Over the Counter
8.	DoseForm		char	11	Tablet/Inhalant/Capsule/etc.
9.	Route		char	9	Oral/Nasal/Injection/etc.
10.	DrugSchedule		numeric		2 to 7 - FDA Drug schedule
11.	VisualDescription		char	12	Visual description of the physical drug Currently there is only room for 12 characters on the labels, but this may change in the future when laser labels are available
12.	Drugname	A	char	40	Appears in the pick lists for MOT, if not sent, default will be first 40 of Tradename
13.	ShortName		char	16	appears on the printed bubbles for MOT card labels, if not sent default will be first 16 of Drugname
14.	NDCNum	W	char	11	Full NDC Number, no "-"s included
15.	SizeFactor		numeric		1 to 6, 99 - Size of pill in relation to how many fit in MOT package bubble. Size is 1-7, 99=Bulk drug that does not get packaged (ie: liquids).
16.	Template		char	1	MOT Drug template for putting drugs into the bubbles (A-N) upper
17.	DefaultIsolate		char	1	0/1 - Make Rx with this drug isolated in package by default
18.	ConsultMsg		char	45	for drugs with consultation messages (i.e.: Do not operate heavy machinery while taking ...)
19.	GenericFor		char	40	Allow Pharmacist to define sets of similar (generic) drugs for replacing in existing Rx's

Table: Location (some rx systems refer to this as Facility)

	Field Name	Required	Type	Max Len	Comments
1.	RxSys_LocID	K	char	10	Rx System unique identifier, **REQUIRED**
2.	RxSys_StoreID		char	10	same as RxSys_StoreID in store table
3.	LocationName	A	char	60	
4.	Address1	W	char	40	
5.	Address2	W	char	40	
6.	City	W	char	30	
7.	State	W	char	2	2 char abbrev, all upper
8.	Zip	W	char	9	Zip Code + 4 - no "-" character
9.	Phone	W	char	10	
10.	Comments		char	32767	any other miscellaneous info you want to keep
11.	CycleDays		numeric		0-35, represents # of days on card, or if 0, # of days depends on the month (anniversary date), this is a default value when creating a new patient
12.	CycleType		numeric		0=monthly, 1=weekly, this is also a default value only used when creating patients.

Table: Patient

Field Name	Required	Type	Max Len	Comments
1. RxSys_PatID	K	char	10	Rx system unique identifier for a patient, **REQUIRED**
2. LastName	A	char	30	
3. FirstName	A	char	25	
4. MiddleInitial	W	char	2	Room for 2 characters. Should NOT have a period at all
5. Address1	W	char	40	
6. Address2	W	char	40	
7. City	W	char	30	
8. State	W	char	2	2 char abbrev, all upper
9. Zip	W	char	9	Zip Code + 4 - no "-" character
10. Phone1	W	char	10	
11. Phone2		char	10	
12. WorkPhone		char	10	
13. RxSys_LocID	W	char	10	same as the RxSys_LocID from location, if not sent, patient will be assigned to the Default Location in MOT.
14. Room	W	char	10	Free form room number
15. Comments		char	32767	any other miscellaneous info you want to keep
16. CycleDate		date		CCYY-MM-DD – date the patients next card batch is due, defaults to today if not supplied
17. CycleDays		numeric		Number of days in the patients card cycle (0-35) (from location record)
18. CycleType		numeric		Type of card this Rx will be put on, 0=monthly, 1=weekly
19. Status		numeric		0 = hold, **1** = active, **NOTE**: THIS DIFFERS FROM DELIMITED VERSION
20. RxSys_LastDoc		char	10	RxSys_DocCode that was sent with a prescriber
21. RxSys_PrimaryDoc		char	10	RxSys_DocCode that was sent with a prescriber
22. RxSys_AltDoc		char	10	RxSys_DocCode that was sent with a prescriber
23. SSN	W	char	9	no "-" characters
24. Allergies	W	char	32767	freeform text
25. Diet	W	char	32767	freeform text
26. DxNotes	W	char	32767	freeform text
27. TreatmentNotes	W	char	32767	freeform text
28. DOB	W	date		CCYY-MM-DD
29. Height		numeric	5	0 to 32767, in inches
30. Weight		numeric	5	0 to 32767, pounds
31. ResponsibleName		char	32767	Freeform text for person/entity responsible for this patient
32. InsName		char	80	Name of Insurer for patient
33. InsPNo		char	20	Insurance Policy number
34. AltInsName		char	80	Alternate insurer
35. AltInsPNo		char	20	Alternate policy number
36. MCareNum		char	20	Medicare Number
37. MCaidNum		char	20	Medicaid Number
38. AdmitDate		date	10	CCYY-MM-DD, date patient admitted to facility
39. ChartOnly		numeric		0 to 1, if 1 then defaults to chart only status for new Rx

Table: Rx

Field Name	Required	Type	Max Len	Comments
1. RxSys_RxNum	K	numeric		(0-99,999,999,999,999)Rx system unique identifier for this prescription, **REQUIRED**
2. RxSys_PatID	A	char	10	Rx system unique identifier for the patient
3. RxSys_DocID	A	char	10	Rx system unique identifier for prescriber
4. RxSys_DrugID	A	char	11	Rx system unique identifier for Drug
5. Sig	A	char	32767	Freeform text for directions, 90 chars are printable on cards, reports have room for unlimited text
6. RxStartDate	W	date		CCYY-MM-DD, date this Rx written. Default is today if not provided
7. RxStopDate	W	date		CCYY-MM-DD, date this Rx expires - if not sent, default is rxstartdate + [default # days (set by user)]
8. DiscontinueDate	W	date		Date the Rx is to be discontinued. Rx will appear on reports and cards prior to, but not on, this date.
9. DoseScheduleName		char	10	name of the dose schedule for this rx, by location
10. Comments		char	32767	Freeform text for additional notes/comments
11. Refills	A	numeric		0-254, number of refills for this rx
12. RxSys_NewRxNum		numeric		if this Rx has been renewed, this will be the Rx number that replaces the current one (If this is provided, the current Rx will have it's DC date set to today, unless DC date is provided). Another record is expected for the new rx.
13. Isolate		numeric		0 or 1, 1=this drug should be put on a card by itself when printing labels (0/1), 0=appears with others on same card, default is based on rxtype
14. RxType	W	numeric		0 to 21, see Rx Type List below
15. MDOMStart		numeric		1 to 31 (only if rxtype is 7), also used if rxtype is 18, see below for info
16. MDOMEnd		numeric		1 to 31 (only if rxtype is 7)
17. QtyPerDose	W	numeric		max for packaged drug 12.00, field can hold 999.99 (Required and only used for RxType 2)
18. QtyDispensed	A	numeric		0-99,999.99, how many pills was this Rx written for
19. Status	W	numeric		1=active, 2=chart only, 3=un-chart only, 99=hold/ignore (chart only and hold/ignore prescriptions do not get packaged on cards, hold/ignore rxs do not show up on reports either), 0 or 100=Discontinue as of date received
20. DoW	W	char	7	string representing days of the week. always 7 chars, X represents a day the drug will get put into a bubble on the card. Sunday= position 1 (REQUIRED for RxType 5)
21. SpecialDoses		char	32767	string representing a custom built card. Format is 0.00, repeated for each day of cycle. Can contain up to 35 doses (Required for RxType 8 & 9). For RxType 18 (alternating), format is 00.00, repeated (same rules for qty as DoseTimesQtys)
22. DoseTimesQtys	W	char	32767	list of times/doses in same formatted as HHMM00.00, where HHMM represents the Hours:Minutes and 00.00 represents the quantity for that time. This repeats for as many times (up to 24) as there are doses desired per day. ~~Not required~~ Ignored for RxType 2 (PRN). Max qty is 12.00, acceptable fractional values are .25, .33, .50, .66, and .75.
23. ChartOnly	W	char	1	1=rx is not packaged on cards but will show up on reports, 0=put in packaging (ie: print on cards)
24. AnchorDate	W	date		Date that a sequential will start printing on, also date that alternating starts on

Fields DoseScheduleName and DoseTimesQtys are companion fields. You can use either or both, depending on what you're trying to send. If your RxSystem sends a dose schedule name (DoseScheduleName <> 'PRN' or 'CUSTOM') AND a dose_time string (DoseTimesQtys), Gateway will create a dose_schedule record if it does not exist in MOT. If you send ONLY DoseTimesQtys, MOT Gateway will assign dose schedule name 'Custom' and use the dose time string you send. If you send ONLY DoseScheduleName, Gateway will determine if a dose time string exists that matches the name. If there's a match, Gateway will use that dose schedule name. Otherwise Gateway will assign the named dose schedule and assign a dummy TIME/QUANTITY (take 0 at midnight) so the user knows they need to correct it.

Since the Gateway will use a default of 1 for the RxType, if you aren't sending it for all types, then don't send it at all. The user can change it in MOT and it won't get reset the next time they work on the rx on the pharmacy system.

Rx Type List:

Value	Type	Isolate Values	Other Fields Used
0	Daily	0/1	
18	Alternating	0/1	MDOMStart – represents # of alternating days, if not sent, default to 1 for new, remains unchanged on existing rxs
5	Day Of Week	0/1	DoW – see description above
7	Day Of Month	0/1	MDOMStart & MDOMEnd – see description above
8	Monthly Titrating	1	
9	Weekly Titrating	1	
2	PRN	1	QtyPerDose
13	Sequential	1	
20	Monthly TCustom	1	
21	Weekly TCustom	1	

Legacy Rx Types - will be converted as appropriate (this is for reference only - please don't use)

Value	Type		
1	Weekly		
4	Weekly QOD		
6	Weekly DOW		
14	Weekly Q3D		
10	Weekly DOM		
3	QOD (every other day)	0/1	Internally converted to Alternating 2 days
15	Q3D (every third day)	0/1	Internally converted to Alternating 3 days

Table: Store

	Field Name	Required	Type	Max Len	Comments
1.	RxSys_StoreID	K	char	10	Rx system unique identifier for the store
2.	StoreName	A	char	60	
3.	Address1		char	40	
4.	Address2		char	40	
5.	City		char	30	
6.	State		char	2	
7.	Zip	A	char	9	
8.	Phone	A	char	10	
9.	Fax		char	10	
10.	DEANum	A	char	10	DEA number that goes with the store, no "-" included

Table: TimesQtys (hours of administration (aka: dose times/qtys))

	Field Name	Required	Type	Max Len	Comments
1.	RxSys_LocID	K	char	10	Rx system unique identifier for the location
2.	DoseScheduleName	K	char	10	Name of the schedule (can be used in Rx)
3.	DoseTimesQtys	AC	char	192	list of times/doses in same formatted as HHMM00.00, where HHMM represents the Hours:Minutes and 00.00 represents the quantity for that time. This repeats for as many times (up to 24) as there are doses desired per day.

***** Revision History

6-21-06 – DoseSchedule of the Rx table should have been named "DoseScheduleName", which is the correct name of the field. Due to the late finding of this error, subsequent compiles of the MOT gateway will have some code to correct the error on incoming data. We would like to, at some point in the future, have the rx systems using xml correct this field name so we can cut down on code overhead.

6-22-06 – Rx Sig comments amended with size limits

5-15-07 – Clarification of column length meaning (it's the maximum length data may be, not a mandatory length)

10-16-07 – clarification on desired columns from rx system if they are available

9-15-10 – Cleaned up result codes for sending data

m:\clients\mot\docs\gateway-v2-xml.doc