EPSON

111-38-URM-010

Epson KDS

XML Configuration

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1. KDS CONFIGURATION

1.1. Basics

1.1.1. Configuration File

The main KDS configuration is defined in a single XML file, normally using the name kvssettings.xml. This same file defines all the devices that are part of the same logical KDS system, as well as defining the specific screen setups for each separate display, and defining any basic menu list that can be used for filtering between displays.

1.1.2. File Handling

Each device runs a web server internally. There are three URLs that interface with the configuration file:

- **http://xx.xx.xx.xx/webconfig/config_appl_kvsconfig.cgi**
  This is the human-accessible web page which can be used to manually upload a configuration file.
- **http://xx.xx.xx.xx/webconfig/upload_kvs_configfile_updater.cgi**
  This is the actual web page used to POST the configuration file, and is what is used by the above URL when the button is pressed. It expects to receive a form which contains a single input of type 'file' with name 'FileName'.
- **http://xx.xx.xx.xx/webconfig/download_kvs_configfile.cgi**
  This URL allows downloading of the previous XML configuration file loaded onto the board.

When this file is loaded onto the 'master' device in the system, the master will automatically re-send the new XML file as an update to all other KDS devices that are defined in the file. Note that the master will recognize itself as the master immediately after receiving the new XML file, so no matter what the current configuration is, sending a new XML file to the machine defined as the master in the file will always 'work'.

1.1.3. Caveats

Note that the file handling method above means that every device that is to be part of the system must have its IP address correctly set *before* the XML file can be uploaded safely, and that the MAC and IP addresses in the XML file must match up with each other. The XML file cannot be used to define those addresses.

1.2. DTD

The basic document type description is only a bare minimum, but can be used for basic validation:

```
<!DOCTYPE KDS [
<!ELEMENT KDS (GlobalSettings,Omnilinks,Displays,Tiles,Menu)>
<!ELEMENT GlobalSettings (Setting)>
<!ELEMENT Setting
            (Name,ListIndex,DateTimeStamp,Version,ClearHistoryDaily,DailyMaintenan
            ceTime,ComunicatesToCloud,SubnetMask,BroadcastAddress,Parser,ParserIPK
            ,ParserDataLength,PrintTileHeader,PrintTileFooter,PrintItemHeader,Prin
            tItemFooter,NoAppend,NoMerge,TimeZone,TimeServer,MenuRouting,EnableTou
            chCalibration)>
<!ATTLIST Setting GUID CDATA #REQUIRED>
<!ELEMENT Name (#PCDATA)>
<!ELEMENT ListIndex (#PCDATA)>
```

```
<!ELEMENT DateTimeStamp (#PCDATA)>
<!ELEMENT Version (#PCDATA)>
<!ELEMENT ClearHistoryDaily (#PCDATA)>
<!ELEMENT DailyMaintenanceTime (#PCDATA)>
<!ELEMENT ComunicatesToCloud (#PCDATA)>
<!ELEMENT SubnetMask (#PCDATA)>
<!ELEMENT BroadcastAddress (#PCDATA)>
<!ELEMENT Parser (#PCDATA)>
<!ELEMENT ParserIPK (#PCDATA)>
<!ELEMENT ParserDataLength (#PCDATA)>
<!ELEMENT PrintTileHeader (#PCDATA)>
<!ELEMENT PrintTileFooter (#PCDATA)>
<!ELEMENT PrintItemHeader (#PCDATA)>
<!ELEMENT PrintItemFooter (#PCDATA)>
<!ELEMENT NoAppend (#PCDATA)>
<!ELEMENT NoMerge (#PCDATA)>
<!ELEMENT TimeZone (#PCDATA)>
<!ELEMENT TimeServer (#PCDATA)>
<!ELEMENT MenuRouting (#PCDATA)>
<!ELEMENT Omnilinks (Printer+)>
<!ELEMENT Printer
            (Name,Bit,Description,ListIndex,IsMaster,DisplayID,BackupDisplayID?,Is
            Printer,AllowPrint,PrintItemOnBumpAtSelf,PrintTileOnBumpAtSelf,PrintTi
            leOnBumpAtMaster,SerialNumber,DeviceName)>
<!ATTLIST Printer IP CDATA #REQUIRED>
<!ATTLIST Printer MAC CDATA #REQUIRED>
<!ATTLIST Printer GUID CDATA #REQUIRED>
<!ELEMENT Bit (#PCDATA)>
<!ELEMENT Description (#PCDATA)>
<!ELEMENT IsMaster (#PCDATA)>
<!ELEMENT DisplayID (#PCDATA)>
<!ELEMENT BackupDisplayID (#PCDATA)>
<!ELEMENT IsPrinter (#PCDATA)>
<!ELEMENT AllowPrint (#PCDATA)>
<!ELEMENT PrintItemOnBumpAtSelf (#PCDATA)>
<!ELEMENT PrintTileOnBumpAtSelf (#PCDATA)>
<!ELEMENT PrintTileOnBumpAtMaster (#PCDATA)>
<!ELEMENT SerialNumber (#PCDATA)>
<!ELEMENT DeviceName (#PCDATA)>
<!ELEMENT Displays (Display+)>
<!ELEMENT Display
            (Name,Bit,DisplayTileID,Description,ListIndex,ScreenSize,SummaryTileSi
            ze,PriorityTime,RushTime,AverageBumpTime?,IsExpeditor,TouchScreen,Menu
            Filter,MenuFilterSummary,StationPrintOnly,Sound,SoundVolume,SoundDurat
            ion,CustomerFacingDisplay,CustomerFacingDisplayExpireTimer,CustomerFac
            ingDisplayShowTimer,CostumerFacingDisplayColumnsPerTile)>
<!ATTLIST Display GUID CDATA #REQUIRED>
<!ELEMENT DisplayTileID (#PCDATA)>
```

```
<!ELEMENT ScreenSize (#PCDATA)>
<!ELEMENT SummaryTileSize (#PCDATA)>
<!ELEMENT PriorityTime (#PCDATA)>
<!ELEMENT RushTime (#PCDATA)>
<!ELEMENT AverageBumpTime (#PCDATA)>
<!ELEMENT IsExpeditor (#PCDATA)>
<!ELEMENT TouchScreen (#PCDATA)>
<!ELEMENT MenuFilter (#PCDATA)>
<!ELEMENT MenuFilterSummary (#PCDATA)>
<!ELEMENT StationPrintOnly (#PCDATA)>
<!ELEMENT Sound (#PCDATA)>
<!ELEMENT SoundVolume (#PCDATA)>
<!ELEMENT SoundDuration (#PCDATA)>
<!ELEMENT CustomerFacingDisplay (#PCDATA)>
<!ELEMENT CustomerFacingDisplayExpireTimer (#PCDATA)>
<!ELEMENT CustomerFacingDisplayShowTimer (#PCDATA)>
<!ELEMENT CustomerFacingDisplayColumnsPerTile (#PCDATA)>
<!ELEMENT Tiles (Tile+)>
<!ELEMENT Tile
            (Name,background,Description,foreground,item,modifier,normal,priority,
            rush,recall,void,append_item,expeditor_bump_background,selection,alert
            ,font_size,lines_per_tile,header_name)>
<!ATTLIST Tile GUID CDATA #REQUIRED>
<!ELEMENT background (#PCDATA)>
<!ELEMENT Description (#PCDATA)>
<!ELEMENT foreground (#PCDATA)>
<!ELEMENT item (#PCDATA)>
<!ELEMENT modifier (#PCDATA)>
<!ELEMENT normal (#PCDATA)>
<!ELEMENT priority (#PCDATA)>
<!ELEMENT rush (#PCDATA)>
<!ELEMENT recall (#PCDATA)>
<!ELEMENT void (#PCDATA)>
<!ELEMENT append_item (#PCDATA)>
<!ELEMENT expeditor_bump_background (#PCDATA)>
<!ELEMENT selection (#PCDATA)>
<!ELEMENT alert (#PCDATA)>
<!ELEMENT font_size (#PCDATA)>
<!ELEMENT lines_per_tile (#PCDATA)>
<!ELEMENT header_name (#PCDATA)>
<!ELEMENT Menu (MenuItem*)>
<!ELEMENT MenuItem (Recipe?)>
<!ATTLIST MenuItem Group CDATA #REQUIRED>
<!ATTLIST MenuItem FriendlyName CDATA #REQUIRED>
<!ATTLIST MenuItem Name CDATA #REQUIRED>
<!ATTLIST MenuItem GUID CDATA #REQUIRED>
<!ELEMENT Recipe (#PCDATA)>
```

```
]>
```

Some of the data requires more specification than the standard DTD format can allow.

1.3. Versions and Compatibility

This document defines the XML file format as it is created by the configuration utility as of version 2.3.x.x. Efforts will be made to ensure bi-directional compatibility as much as possible, so that newer versions of the firmware will continue to be able to read old XML files, and newer XML files can still be read by older firmware. However this cannot be guaranteed.

1.4. DHCP Handling

There is some special consideration required if the printers are to be configured for DHCP.

Specifically, all the notes about IP and MAC addresses under Caveats above are still true: all the MAC addresses must match the devices, and all IP addresses must match the *current* IP addresses of the printers. It doesn't matter if the addresses change later, but the master device uses the IP addresses in the XML file to forward the XML file to the rest of the network. So the IP addresses must be correct at the time the file is first uploaded.

This can be worked around if the XML file is uploaded to each of the devices individually. That said, uploading the file requires knowing the IP address anyway.

2. Detailed Description

2.1. General

2.1.1. Document Root and Basic Structure

The basic document root is <KDS>, and it contains five sections: GlobalSettings, Omnilinks, Displays, Tiles, and Menu. Each of those sections contains zero or more subsections.

2.1.2. Required Attributes

The document root and the first level 'section' elements have no attributes. Every subsection element, however, has at least a GUID attribute, which is normally written in the standard hexadecimal form: "xxxxxxxx-xxxx-4xxx-yxxx-xxxxxxxxxxxx". Some have other attributes as well.

All GUIDs use the standard v4 pseudo-random format, where the first hex digit of the third parameter must be the version number '4', and the first hex digit of the fourth parameter must be 8, 9, a, or b. GUID hex digits should be in a consistent case within the file to allow for text matching. (Lower case is preferred, but consistent case is required.)

2.1.3. Address Attributes

The device-specific 'Printer' subsection elements contain two extra attributes for the addresses of the device.

One is the MAC attribute, the value of which is the hardware Ethernet address for the device. This is specified as "xx:xx:xx:xx:xx:xx". This attribute is the primary matching method by which any given device decides that this is the Printer subsection it needs to look at to define itself, as MAC addresses

should always be unique on a given network. Any alphabetical characters in this should be upper case.

The other is the IP attribute, the value of which is the TCP/IPv4 address for the device, specified in the usual dotted notation “ddd.ddd.ddd.ddd”. (IPv6 is currently not supported.)

As noted above, both of these addresses must already be pre-configured on all devices through other means; while the MAC address is how any given device knows which section in the XML file describes it, the IP address is how any given device knows how to talk to all the other devices on the network.

2.1.4. Common Value Types

2.1.4.1. Flags

Several elements are defined as flags, where the contents of the element should be either ‘True’ or ‘False’. That capitalization is required.

2.1.4.2. Colours

In the Tile subsection, many of the values are the different colours which will get displayed on the screen. Each of these values should be a simple #RRGGBB string.

2.1.4.3. Header/Footer

In the GlobalSettings section, there are four settings which are text strings to be attached as headers or footers to data printed. For the most part, these can be just straight text strings; the code will send code to clear formatting before the header/footer and send a line feed afterward. The text strings do allow for some standard character escapes, however:

- \n – line feed
- \t – tab
- \v – vertical tab
- \x*nn* – character specified by hexadecimal data
- \0*nnn* – character specified by octal data

The strings should be no more than 255 characters, though that limit is on the data after parsing, not the pre-parsed text in the XML file. So pre-defined graphics logos can be used, but graphics data within the command is out.

It is important to note that the hexadecimal and octal extensions continue parsing as long as the next character looks like a hexadecimal or octal character. This means, for example, that the command to perform center justification (ESC a 1) cannot be expressed as ‘\x1ba1’ because ‘a’ and ‘1’ both look like hexadecimal digits. You need to either use octal with ‘\033a1’, which works because ‘a’ is not an octal digit, or you need to express the next characters as escaped characters as well, for example ‘\x1b\x61\x31’.

2.1.4.4. Screen Layouts

A couple of the elements in the Displays section contain text in the form ‘SmXn’, where ‘m’ is the number of rows on the screen, and ‘n’ is the number of columns.

2.1.4.5. Durations

Several values are times in the form of text strings reading “mm:ss”, which specify durations or timeouts for certain activities.

2.1.5. Section Order

In theory the order of the sections in an XML file shouldn’t matter. In practice, currently the sections do need to be in the following order. (Specifically, the Omnilinks section must be before the Displays section, and the Displays section must be before the Tiles section.) Failure to keep these in the correct order can cause startup issues.

This restriction may be relaxed in a future version.

2.2. Routing, Merging, and Options

2.2.1. Routing Types

There are two basic routing types and a couple of options in terms of how certain things are handled that all interact with each other. While some of this is described in with the individual options, it's being put here as well to have it all in one place.

The first type of routing is 'KDS' or menu routing. With this type of routing all data is sent directly to the master device. MenuFilters are set up so that any item that matches one of the filter strings ends up on any display with that filter string. Modifiers that match filter strings add to the items, so if an item matches the filter string for one display, and one of its modifiers matches the filter string for a different display, then the item will show up on both. Items that don't match any filter string go to all displays by default.

The second type of routing is 'POS' routing. With this type of routing, the POS controls which display shows a particular item on an order by sending the item directly to that display rather than to the master. MenuFilters are not needed.

Note that the KDS actually supports both types of routing at all times; the only time anything in the configuration needs to be changed based on routing type is if the master itself has a display attached to it, in which case 'KDS' routing means that data sent to the master treats it as the master, and shows up on all displays by default; while 'POS' routing means data sent to the master is treated as the display attached to the master, and shows up only on that display by default.

2.2.2. Merging and Voiding

Merging is something that only applies to POS routing, where data has come in from other displays. If the same item on the same order is sent to two different displays, by default it is treated as the same item internally. This means that striking out the item on one display will strike it out on all displays. In order to match for a merge, the item and all modifiers must match exactly, and the item must not already exist on that display.

In POS routing, void operations are partially treated as merged. A void to any display effectively voids to all displays, but voids to each display are still allowed. This is particularly important if there are multiple of the same item in an order, as otherwise voids of one item sent to two different displays could void two different copies of the item in the order.

2.2.3. Options

There are two options that affect primarily POS routing. Both of these are primarily to make the system act more like multiple separate devices rather than one combined device.

The first is 'NoAppend', which causes two chits with the same order number sent to the same display (or both to the master in KDS routing) to be treated as different orders.

The second is 'NoMerge', which causes two chits with the same order number sent to two different displays to not be merged, but instead be either appended or treated as a different order depending on the NoAppend flag.

Both of these together effectively make each display act as a separate printer.

2.2.4. Examples

All of the following examples assume this sequence of events:

- Order 1234 sent with 'Burger' and '- Fries' to display 1, then display 2

- Order 1234 sent with ‘Burger’ to display 2, then display 1
- Order 1234 sent a void for ‘Burger’ and ‘- Fries’ to display 2 only

Also, the presence of a separate expediter display is used to show what is stored. In practice there is not much point in using an KDS-run expediter if NoMerge is True, and especially if both are true.

2.2.4.1. NoAppend = False, NoMerge = False

This is the default mode of operation, things are merged together into complete orders as much as possible.

Display 1		Display 2		Expediter			
#1234		#1234		#1234			
~~Burger~~		~~Burger~~		~~Burger~~			
~~- Fries~~		~~- Fries~~		~~- Fries~~			
Burger		Burger		Burger			

2.2.4.2. NoAppend = True, NoMerge = False

This mode is good if the order or check number is not always unique (including cases where a single order will be sent in separate parts due to timing issues) but you want to take advantage of other KDS functionality.

Display 1		Display 2		Expediter			
#1234	#1234-1	#1234	#1234-1	#1234	#1234-1		
~~Burger~~	Burger	~~Burger~~	Burger	~~Burger~~	Burger		
~~- Fries~~		~~- Fries~~		~~- Fries~~			

2.2.4.3. NoAppend = False, NoMerge = True

This mode would be useful if the multiple displays are actually for separate kitchen stations, for example two separate hamburger queues to allow orders to be split between them for speed.

Display 1		Display 2		Expediter			
#1234		#1234		#1234			
Burger		~~Burger~~		Burger			
- Fries		~~- Fries~~		- Fries			
Burger		Burger		~~Burger~~			
				~~- Fries~~			
				Burger			
				Burger			

2.2.4.4. NoAppend = True, NoMerge = True

This is the mode that acts the most like separate devices, for a POS that already expects to be talking to separate printers.

Display 1		Display 2		Expediter			
#1234	#1234-3	#1234-1	#1234-2	#1234	#1234-1	#1234-2	#1234-3
Burger	Burger	~~Burger~~	Burger	Burger	~~Burger~~	Burger	Burger
- Fries		~~- Fries~~		- Fries	~~- Fries~~		

2.3. GlobalSettings/Settings Section

The GlobalSettings section contains exactly one subsection called ‘Settings’. That in turn contains settings which apply to the KDS system as a whole, which must be identical for all machines on the network.

```
  <GlobalSettings>
    <Setting GUID="12942fb9-9323-469d-9061-2d70114d1f35">
      <Name>Site Name</Name>
      <ListIndex/>
      <DateTimeStamp>2016-4-29T14:14:5</DateTimeStamp>
      <Version>1.2.0.0</Version>
      <ClearHistoryDaily>False</ClearHistoryDaily>
      <DailyMaintenanceTime>09:00 AM</DailyMaintenanceTime>
      <ComunicatesToCloud>False</ComunicatesToCloud>
      <SubnetMask>255.255.255.0</SubnetMask>
      <BroadcastAddress>192.168.192.255</BroadcastAddress>
      <Parser>[Epson][Version
0.51]waxwingviid-parser-fstec_0.51-r1.5_armv5te</Parser>
      <ParserIPK>ITxhcmNoPgpkZWJpYW…</ParserIPK>
      <ParserDataLength>3058</ParserDataLength>
      <PrintTileHeader>\x1D(L\06\0\x30\x45LG\01\01</PrintTileHeader>
      <PrintTileFooter>----------------------------------------</PrintTileFooter>
      <PrintItemHeader>\x1B\x61\01TO GO\x1B\x61\0</PrintItemHeader>
      <PrintItemFooter></PrintItemFooter>
      <NoAppend>False</NoAppend>
      <NoMerge>False</NoMerge>
      <TimeZone>America/Toronto</TimeZone>
      <TimeServer>pool.ntp.org</TimeServer>
      <MenuRouting>POS</MenuRouting>
      <EnableTouchCalibration>False</EnableTouchCalibration>
    </Setting>
  </GlobalSettings>
```

2.3.1. Name

The ‘Name’ element contains text describing the site as a whole, and usually should contain a store name and number to uniquely identify the site. Currently it is mostly just displayed in the configuration utility, but in future it could also be used as an identifier in cloud communications.

2.3.2. ListIndex

The ‘ListIndex’ element is purely for the use of the Utility. It can be left blank in this section.

2.3.3. DateTimeStamp

The ‘DateTimeStamp’ element contains text of a simple timestamp of the time the configuration file was created, and can be used to define which file was the most recent. It is normally local time, presented in a slightly simplified ISO 8601 format as “yyyy-mm-ddThh:mm:ss”. The exact value is rarely relevant, as it only exists so the software can detect when an older XML file is overwriting a newer one.

2.3.4. Version

The ‘Version’ element contains text of the version of the configuration utility that created this XML file. It is currently not used by the firmware on the board. However, in order to allow for future versions of the firmware that might use it to make parsing decisions, it should be kept to 2.0.0.3 to match the standard in this document.

2.3.5. ClearHistoryDaily

The ‘ClearHistoryDaily’ element is a flag defining whether or not to clear out a backlog of data on a daily basis. Currently this only controls the saving of the raw receipt data; if it is set to ‘True’, then raw receipt data is not saved. Setting this ‘True’ produces some minor performance improvement, but at the loss of the ability to collect receipt data for analysis.

2.3.6. DailyMaintenanceTime

The ‘DailyMaintenanceTime’ element contains a time in the form “hh:mmXM” describing when the start of the business day is. This time on the local clock is the time at which the history clearing will occur. At this time, the following will happen:

- Any chit more than an hour old that has been bumped from all displays will be deleted
- Any chit more than 24 hours old will be deleted, whether or not it has been bumped from all displays
- The database is compacted
- The system reboots to help perform other startup checks

This parameter was previously called ‘BusinessStartTime’, but the old name should no longer be used.

2.3.7. ComunicatesToCloud

The ‘ComunicatesToCloud’ element (be careful of the misspelling) is a flag defining whether or not the KDS sends tracking data to a cloud server. Currently no data is sent, so this setting is ignored and treated as always False.

2.3.8. SubnetMask

The ‘SubnetMask’ element is a subnet mask in the usual IP address format; it will usually be 255.255.255.0.

2.3.9. BroadcastAddress

The ‘BroadcastAddress’ element is the IP address to use for broadcasting out to the local network. This is not currently used by the firmware.

2.3.10. Parser

The ‘Parser’ element defines which parser is used to take apart the data generated by the POS and display it on the screens, and it should be matched to the POS in question. This value is currently used primarily as a flag for the utility so it knows what was used later.

The normal format is ‘[Name][Version x.xx]packagefilename’ as displayed above. The exact contents are only important if you want to be able to use the configuration utility on this setup later.

2.3.11. ParserIPK

The ‘ParserIPK’ element contains a base64-encoded copy of the actual .ipk file containing the parser code. The code on the board will extract the package file, check to see if it matches what is already installed, and will install the new package if it doesn’t match.

Note that if there is no ParserIPK element, the code will fall back to an older method of using the string in the Parser element to select the parser. However, that requires that a parser already be installed on the board, and the current setup comes with no pre-installed parsers.

2.3.12. ParserDataLength

The ‘ParserDataLength’ element contains a number describing the original file length of the file that is included in the ParserIPK element.

2.3.13. PrintTileHeader

The ‘PrintTileHeader’ element contains a string that will be printed before any case of printing an entire order. Please see section 2.1.4.3 for more details.

2.3.14. PrintTileFooter

The ‘PrintTileFooter’ element contains a string that will be printed after any case of printing an entire order. Please see section 2.1.4.3 for more details.

2.3.15. PrintItemHeader

The ‘PrintItemHeader’ element contains a string that will be printed before any case of printing a single item. Please see section 2.1.4.3 for more details.

2.3.16. PrintItemFooter

The ‘PrintItemFooter’ element contains a string that will be printed after any case of printing a single item. Please see section 2.1.4.3 for more details.

2.3.17. NoAppend

The ‘NoAppend’ element is a flag that indicates that every order is to be treated as a new order; even if there is a matching order number already in the system, appends or merges will not be performed.

2.3.18. NoMerge

The ‘NoMerge’ element is a flag that indicates that merges will not be performed. A ‘merge’ means that if POS routing is used, and the same order information is sent to two different displays, the code will assume they refer to the same actual items on the order. You probably do not want to enable this flag if any display is an expediter display controlled by the KDS, as it will result in the expediter display showing everything that was sent to every display individually. See section 2.2.4 for examples and details.

2.3.19. TimeZone

The ‘TimeZone’ element is a text string containing the standard name from the official IANA tz database to use for the official time zone.

See https://en.wikipedia.org/wiki/List_of_tz_database_time_zones for a complete list. Note that this must be a name that is actually installed, and not all are by default.

The base list guaranteed to be supported by the KDS includes:

- Africa/Cairo
- America/Anchorage
- America/Caracas
- America/Chicago
- America/Denver
- America/Los_Angeles
- America/New_York
- America/Sao_Paulo
- Asia/Dhaka
- Asia/Dubai
- Asia/Hong_Kong
- Asia/Karachi
- Asia/Tokyo
- Australia/Adelaide
- Australia/Brisbane
- Australia/Darwin
- Australia/Perth
- Australia/Sydney
- CET
- CST6CDT
- EET
- EST
- EST5EDT
- Etc/GMT
- Etc/GMT+0
- Etc/GMT+1
- Etc/GMT+10
- Etc/GMT+11
- Etc/GMT+12
- Etc/GMT+2
- Etc/GMT+3
- Etc/GMT+4
- Etc/GMT+5
- Etc/GMT+6
- Etc/GMT+7

- Etc/GMT+8
- Etc/GMT+9
- Etc/GMT-0
- Etc/GMT-1
- Etc/GMT-10
- Etc/GMT-11
- Etc/GMT-12
- Etc/GMT-13
- Etc/GMT-14
- Etc/GMT-2
- Etc/GMT-3
- Etc/GMT-4
- Etc/GMT-5
- Etc/GMT-6
- Etc/GMT-7
- Etc/GMT-8
- Etc/GMT-9
- Etc/GMT0
- Etc/Greenwich
- Etc/UCT
- Etc/UTC
- Etc/Universal
- Etc/Zulu
- Europe/London
- Europe/Moscow
- Europe/Paris
- GB
- GMT
- GMT+0
- GMT-0
- GMT0
- Greenwich
- HST
- MET
- MST
- MST7MDT
- NZ
- NZ-CHAT
- PRC
- PST8PDT

- Pacific/Honolulu
- Pacific/Noumea
- ROC
- ROK
- UCT
- UTC
- Universal
- W-SU
- WET
- Zulu

Note that several of them are synonyms of each other, particularly of UTC.

Also, while the single name strings work from the XML file, they should be avoided if possible, as they will not be represented properly on the web page. The accepted synonym for UTC is 'Etc/GMT+0'.

2.3.20. TimeServer

The 'TimeServer' element is a text string containing either the hostname or an IP address of a known and trusted NTP time server accessible from the KDS devices. Note that if this is a hostname, then DNS must also be configured properly (which is not done within this file).

If the NTP server is not accessible, devices will first fall back to a 'local' mode where the master is considered the valid time server and all other devices will synchronize to it. If the master is offline as well, they will then fall back to an 'orphan' mode where all the remaining devices on the local network attempt to stay synchronized to each other. The device clocks need to remain synchronized so that displays of order times will be consistent across displays.

It is strongly recommended that a trusted NTP server be used, especially when the system is first set up, to ensure the devices can compensate for any minor electrical differences in the clock.

2.3.21. MenuRouting

The 'MenuRouting' element is a text string describing which form of routing should be used. It has two valid values: 'POS' which means that data is routed to different displays based on which displays the POS sends to (barring the expediter, which always sees everything); and 'KDS', which means that data is routed to different displays based on the contents of the Menu/MenuItem section and the MenuFilter elements for each display.

In practice, both forms of routing are actually enabled at all times, and this setting only makes a difference if the master has a display and the POS sends data directly to the Master. In that case, under 'POS' routing the data will only show up on the Master's display and not on other displays, but under 'KDS' routing it will show up on all displays (unless limited by a MenuFilter).

2.3.22. EnableTouchCalibration

The 'EnableTouchCalibration' element is either 'True' or 'False'. When 'True', it allows triggering touchscreen calibration by a press-and-hold action on any touchscreen connected to a KDS display. When 'False', the 10-second press-and-hold action will not trigger touchscreen calibration anymore. The default configuration in the KDS Utility should be 'False'. In the event an older version of the utility is used which doesn't set this parameter, KDS firmware 2.30 and newer will treat it as 'False' by default as well.

2.3.23. PrintSpecialHeader

The ‘PrintSpecialHeader’ element is a flag; when this flag is ‘True’ then items marked as ‘headers’ or ‘labels’ within the chit will also be printed when PrintOnBump is enabled. Otherwise they aren’t. This is configurable because some systems use this sort of header for a seat number which they don’t want printed, but others use this header for special instructions which they do want printed. This flag was previously known as ‘EnableLabelPrint’, but the new name should be used.

2.4. Omnilinks/Printer Section

The Omnilinks section contains one Printer subsection element for every physical device that is part of the network, whether it involves an actual printer or just a display box.

As noted above, the Printer element contains three attributes: GUID, IP, and MAC.

```
  <Omnilinks>
    <Printer IP="192.168.192.53" MAC="00:00:48:17:30:85"
GUID="bd555271-93c5-4ed8-ac0f-48cc92bdcffe">
      <Name>Burger Station</Name>
      <Bit>1</Bit>
      <Description>Burger%20Station</Description>
      <ListIndex>0</ListIndex>
      <IsMaster>False</IsMaster>
      <DisplayID>e94ccf4b-6a31-4965-8a84-28a9e5d3b2a0</DisplayID>
      <BackupDisplayID/>
      <IsPrinter>False</IsPrinter>
      <AllowPrint>False</AllowPrint>
      <PrintItemOnBumpAtSelf>True</PrintItemOnBumpAtSelf>
      <PrintTileOnBumpAtSelf>False</PrintTileOnBumpAtSelf>
      <PrintTileOnBumpAtMaster>True</PrintTileOnBumpAtMaster>
      <SerialNumber>V3KF000550</SerialNumber>
      <DeviceName>TM-T88V</DeviceName>
    </Printer>
    …
  </Omnilinks>
```

2.4.1. Name

The ‘Name’ element contains a short line of text describing this particular device, usually in the form of either a location or a description of what it is used for.

This is the string that is brought up on a display during the boot splash screen.

2.4.2. Bit

The ‘Bit’ element is a number that must be a power of two, be unique for each device, and be no greater than 1024. This value is used internally to help track the list of devices which are currently visible on the network.

2.4.3. Description

The ‘Description’ element contains more detailed text describing this particular device. It has little direct use aside from tracking information about the device that can be kept for later.

2.4.4. ListIndex

The ‘ListIndex’ element is purely for the use of the Utility, to handle the order of devices on screen. If there is any likelihood that this file will ever be read by the Utility, this element should be a single number that starts at ‘0’ and counts up for each Printer element.

2.4.5. IsMaster

The ‘IsMaster’ element is a flag defining that this device is the master device for controlling the network. This must be ‘True’ for exactly one device in the system; that device will then act as the central point for communications with all the others as long as it is connected to the network.

There is one requirement for whichever device is the master. First, if ‘IsMaster’ is True, then ‘IsPrinter’ (below) must also be True. A non-printer Master is not supported.

Previously, when ‘IsMaster’ was True and there was more than one device in the configuration, then ‘DisplayID’ was required to be blank. This is no longer a restriction: the master device can now support a display no matter the size of the network.

2.4.6. DisplayID

The ‘DisplayID’ element may be blank or empty for devices which do not have an attached display. If it contains data, it must contain a GUID value which matches the GUID attribute of one of the ‘Display’ subsections. That matching ‘Display’ subsection will be used for the display-specific configuration.

Note that an empty DisplayID element is normally only applicable for the master device.

2.4.7. BackupDisplayID

The ‘BackupDisplayID’ element should be empty, as this feature is not currently used.

2.4.8. IsPrinter

The ‘IsPrinter’ element is a flag describing this device as a device that is actually capable of printing. It should be ‘True’ for a printer and ‘False’ for a display box.

2.4.9. AllowPrint

The ‘AllowPrint’ element is a flag that specifies that incoming POS data should normally be printed to paper. Normally this should be set to ‘False’ once the system is out of the initial stages of the pilot test. Note that in some parsers it is possible to override this under specific conditions; for example, the standard Positouch parser will still print chits marked as ‘TO GO’ even if printing is normally disabled.

2.4.10. PrintItemOnBumpAtSelf

The ‘PrintItemOnBumpAtSelf’ element is a flag specifying that when a single item is bumped, then that item (and all associated modifiers) will be printed out at the local printer, along with the ‘PrintItemHeader’ and ‘PrintItemFooter’.

2.4.11. PrintTileOnBumpAtSelf

The ‘PrintTileOnBumpAtSelf’ element is a flag specifying that when an entire order is bumped, then that order (or at least what of it is visible on that display) will be printed out at the local printer, along with the ‘PrintTileHeader’ and ‘PrintTileFooter’.

2.4.12. PrintTileOnBumpAtMaster

The ‘PrintTileOnBumpAtMaster’ element is a flag specifying that when an entire order is bumped, then that order (or at least what of it is visible on that display) will be printed out at the master printer, along with the ‘PrintTileHeader’ and ‘PrintTileFooter’.

2.4.13. SerialNumber

The ‘SerialNumber’ element contains the serial number of the printer. This is not used by the firmware, and exists solely so the configuration utility can display serial numbers without having to ask the device every time.

2.4.14. DeviceName

The ‘DeviceName’ element contains the model of the printer. As with ‘SerialNumber’, this is only used by the configuration utility, not the firmware.

2.5. Displays/Display Section

The Displays section contains one Display subsection element for each unique display. Note that it is possible for more than one Printer to refer to the same Display, in which case the two devices will always be showing the same thing. This may or may not be what you want.

```
  <Displays>
    <Display GUID="e94ccf4b-6a31-4965-8a84-28a9e5d3b2a0">
      <Name>Burger Display</Name>
      <Bit>1</Bit>
      <DisplayTileID>1bd0d90a-3eca-4ca7-b347-3b0529dab13f</DisplayTileID>
      <Description>Burger%20Display</Description>
      <ListIndex>0</ListIndex>
      <ScreenSize>S2X5</ScreenSize>
      <SummaryTileSize>S2X1</SummaryTileSize>
      <PriorityTime>3:00</PriorityTime>
      <RushTime>5:00</RushTime>
      <AverageBumpTime/>
      <IsExpeditor>False</IsExpeditor>
      <TouchScreen>False</TouchScreen>
      <CustomerFacingDisplay>False</CustomerFacingDisplay>
      <CustomerFacingDisplayExpireTimer>00:00</CustomerFacingDisplayExpireTimer>
      <CustomerFacingDisplayShowTimer>False</CustomerFacingDisplayShowTimer>
      <CustomerFacingDisplayColumnsPerTile>S1X1</CustomerFacingDisplayColumnsPerTile>
      <MenuFilter>50b49de6-e29b-4d89-aafe-246a7302d49e::74847ad1-d3f7-4732-8649-
da111f86450e</MenuFilter>
      <MenuFilterSummary/>
      <StationPrintOnly>False</StationPrintOnly>
      <Sound>U220.wav</Sound>
      <SoundVolume>50</SoundVolume>
      <SoundDuration>5</SoundDuration>
    </Display>
    …
  </Displays>
```

2.5.1. Name

The ‘Name’ element contains a short line of text describing this particular display, usually in the form of what is normally displayed here.

2.5.2. Bit

The ‘Bit’ element is a number that must be a power of two, be unique for each device, and be no greater than 1024. This value is used internally to track which screens any particular item must be displayed on, and which screens have already bumped it off.

Because it is used by the internal database to track which screens display particular information, this value must be kept constant across versions of the XML file.

2.5.3. DisplayTileID

The ‘DisplayTileID’ element contains a GUID value which matches the GUID attribute of one of the ‘Tile’ subsections. That matching ‘Tile’ subsection will be used for colour configuration.

2.5.4. Description

The ‘Description’ element contains more detailed text describing this particular display. It has little direct use.

2.5.5. ListIndex

The ‘ListIndex’ element is purely for the use of the Utility, to handle the order of devices on screen. If there is any likelihood that this file will ever be read by the Utility, this element should be a single number that starts at ‘0’ and counts up for each Display element.

2.5.6. ScreenSize

The ‘ScreenSize’ element contains the screen layout value for this particular screen. It is normally of the form “S2X6” for a screen with two rows and six columns. The system can support from one to three rows, and anywhere from four to six columns.

2.5.7. SummaryTileSize

The ‘SummaryTileSize’ contains the screen layout value for the summary tile on the screen. It is normally ‘None’ to indicate no summary tile, but can also be of the form “SnX1” for a summary tile that takes up ‘n’ rows. The number of rows can be anything from one to three, with a maximum of the number of rows in the ‘ScreenSize’ element.

2.5.8. PriorityTime

The ‘PriorityTime’ element contains a string of the form “mm:ss” describing the length of time an order has to be on the screen before the colour of the header at the top shifts from the default colour to the priority colour.

2.5.9. RushTime

The ‘RushTime’ element contains a string of the form “mm:ss” describing the length of time an order has to be on the screen before the colour of the header at the top shifts from the priority colour to the rush colour.

2.5.10. AverageBumpTime

The ‘AverageBumpTime’ element is currently unused.

2.5.11. IsExpeditor

The ‘IsExpeditor’ element is a flag which specifies that this display is to be used as an expeditor. This means that all items will display on this screen, no matter what other filters are in place. It also means that an order cannot be bumped off the expeditor until it has been bumped off all the other screens.

2.5.12. TouchScreen

The ‘TouchScreen’ element is a flag which specifies that this display has a touchscreen attached, rather than requiring a bump bar. This setting is mostly used to control some differences in the UI between touchscreen and bumpbar modes, adding visual buttons on the screen to allow capabilities like recall to be accessed from the touchscreen.

Both touchscreen and bumpbar will normally work no matter how this flag is set, but if it is False than some features may not be available from the touchscreen alone.

2.5.13. MenuFilter

The ‘MenuFilter’ element is used to filter items from the list; this allows, say, burgers to display on one screen and soups to display on a different screen. Any item which does not exist on any list will display on all screens to be safe.

The data in the element consists of a list of GUIDs matching the GUIDs of MenuItem elements from the Menu section. These GUIDs are separated by pairs of colons, as above.

2.5.14. MenuFilterSummary

The ‘MenuFilterSummary’ element is used by the utility to maintain some idea of selected groups rather than the current selected items. It is not used by the firmware.

2.5.15. StationPrintOnly

The ‘StationPrintOnly’ element is a flag which specifies that this station is to only be used for printing, and any orders will automatically be bumped off any station with this flag set if the order is only on stations with this flag set.

This is mostly used for situations such as drive-thru windows, where a printed chit is needed to match and hand out with the order.

2.5.16. Sound

The ‘Sound’ element is a string which is either ‘None’, indicating that sound is disabled, or one of the below filenames which indicates a particular sound to be played when a new order arrives:

- Air_Horn
- Chinese_Gong
- Ding1 (solid bell)
- Ding2 (old countertop call for service bell)
- Dong (tube chime)
- Electronic_01 (quick fanfare)
- Electronic_02 (ta-da cymbals)
- Electronic_03 (tshuuu)
- Electronic_04 (doorbell ding-dong)
- Electronic_05 (three-tone descending chime)
- Electronic_06 (three tone synth oh-ee-oh)
- Police_Whistle
- T88V (sounds like thermal printer printing a receipt)
- T88V_2.5sec (same as above)
- U220_2_sec (sounds like one of the old impact kitchen printers)
- U220_4_sec (same as above but longer)

The parts in parentheses are just a description of the sound, not part of the name, so don't include them in the file. Sound is handled through USB-Audio.

2.5.17. SoundVolume

The 'SoundVolume' element is a number from 0 to 100 defining the volume of the sound to be played, running from minimum to maximum. This field is not used unless Sound is something other than 'None'.

2.5.18. SoundDuration

The 'SoundDuration' element is a number in seconds of the length of the sound, which should be in the two to five second range. This can be used to cut short a longer sound rather than playing all of it. This field is not used unless Sound is something other than 'None'. If this value does not exist, the default will be 2.

2.5.19. CustomerFacingDisplay

The 'CustomerFacingDisplay' element is a flag which specifies that this display is to be used as a customer facing summary of pending orders.

2.5.20. CustomerFacingDisplayExpireTimer

The 'CustomerFacingDisplay' element is a duration which specifies that orders should only show up for a specific period of time, and then should be automatically removed. This field is not used unless CustomerFacingDisplay is True.

2.5.21. CustomerFacingDisplayShowTimer

The 'CustomerFacingDisplayShowTimer' element is a flag which specifies whether or not to display the timer of how long the order has been waiting on the order. This field is not used unless CustomerFacingDisplay is True.

2.5.22. CustomerFacingDisplayColumnsPerTile

The 'CustomerFacingDisplayColumnsPerTile' element is a screen layout value, by default "S1X2". This field is not used unless CustomerFacingDisplay is True.

2.6. Tiles/Tile Section

The Tiles section contains one Tile subsection element for each different colour scheme. This can be used to give certain displays different setups to make them easier to see, but is also used just so that all displays point to one particular 'theme' so that they can be all changed at once rather than changing each individually.

```
<Tiles>
  <Tile GUID="1bd0d90a-3eca-4ca7-b347-3b0529dab13f">
    <Name>10-Liner Tile</Name>
    <background>#FFFFFF</background>
    <Description>Default%20Colors</Description>
    <foreground>#020002</foreground>
    <ListIndex>0</ListIndex>
    <item>#0D000D</item>
    <modifier>#826C13</modifier>
    <normal>#0A225E</normal>
    <priority>#6E5F01</priority>
```

```
      <rush>#A6070A</rush>
      <recall>#F2F29D</recall>
      <void>#05427D</void>
      <append_item>#ED5EED</append_item>
      <expeditor_bump_background>#06F539</expeditor_bump_background>
      <selection>#F0E25F</selection>
      <alert>#A10F14</alert>
      <font_size>20</font_size>
      <lines_per_tile>10</lines_per_tile>
      <header_name>QTY</header_name>
      <tile_type>KDSTile</tile_type>
    </Tile>
    …
  </Tiles>
```

2.6.1. Name

The ‘Name’ element contains a short line of text describing this particular theme.

2.6.2. background

The ‘background’ element is a colour describing the default background colour of the order.

2.6.3. Description

The ‘Description’ element contains more detailed text describing this particular theme. It may be useful for marking specific themes for visually impaired users.

2.6.4. foreground

The ‘foreground’ element is a colour describing the default text colour of the order.

2.6.5. ListIndex

The ‘ListIndex’ element is purely for the use of the Utility. It can be left blank in this section.

2.6.6. item

The ‘item’ element is a colour describing the text colour of new items.

2.6.7. modifier

The ‘modifier’ element is a colour describing the text colour of new modifiers.

2.6.8. normal

The ‘normal’ element is a colour describing the text colour of the time on a new order.

2.6.9. priority

The ‘priority’ element is a colour describing the text colour of the time after the priority timeout.

2.6.10. rush

The ‘rush’ element is a colour describing the time text colour of the time after the rush timeout.

2.6.11. recall

The ‘recall’ element is a colour describing the text colour of a recalled order header.

2.6.12. void

The ‘void’ element is a colour describing the text colour of a voided items or modifiers.

2.6.13. append_item

The ‘append_item’ element is a colour describing the background marker colour for appended items or modifiers.

2.6.14. expeditor_bump_background

The ‘expeditor_bump_background’ element is a colour describing the background colour of an order that has been bumped from all other screens and can now be bumped from the expeditor.

2.6.15. selection

The ‘selection’ element is a colour describing the background colour of the selection cursor when the user goes into an order to select and bump only specific items.

2.6.16. alert

The ‘alert’ element is a colour describing the text colour of an alert or allergy reminder.

2.6.17. font_size

The ‘font_size’ element is a number indicating the point size of the text displayed in the order. Usual useful values are in the range of 16-24, and can include half points.

2.6.18. lines_per_tile

The ‘lines_per_tile’ element is a number describing the normal maximum number of lines in an order; this affects the spacing between items on the screen. The product of lines_per_tile and font_size should probably not exceed about 250 for a two-row display.

2.6.19. header_name

The ‘header_name’ element is the text for the numeric column in the order display. This should be either ‘SEAT’ (for the seat number in table service) or ‘QTY’ (for the item quantity in quick service).

2.6.20. tile_type

The ‘tile_type’ element describes what type of tile information this provides, and is only of interest to the Utility. The normal value is ‘KDSTile’, but another possible value is ‘CustomerFacingTile’ if this has the colours for a customer facing display instead. The utility uses this to handle default tile selection.

2.7. Menu/MenuItem Section

The MenuItem elements all contain no text or other elements, only attributes. One is the GUID attribute, which must match the GUID value in the MenuFilter element of a Display in order to be used.

Each of these elements represents one item or modifier that may appear on the chit sent to the kitchen. If an item arrives that matches one or more of these entries, and that entry is also referenced in the MenuFilter of an active display, then that item will only show up on the display in question. If the item name matches none of these entries, then it will show up on all displays.

For modifiers, it’s slightly different, because modifiers are considered a part of the item they modify. If a modifier matches one or more of the entries, then it and the item is attached to (and all other modifiers attached to it) will show up on that display *in addition to* the display(s) that the item was sent to. If it matches none of the entries, it and the item and other modifiers remain only on whichever display the item was sent to.

```
  <Menu>
    <MenuItem Group="BURGER" FriendlyName="Classic Burger" Name="CLASSIC BURGER"
GUID="50b49de6-e29b-4d89-aafe-246a7302d49e"/>
```

```
    <MenuItem Group="BURGER" FriendlyName="Bacon Cheeseburger" Name="BCN CHSBURGER"
GUID="74847ad1-d3f7-4732-8649-da111f86450e">
      <Recipe>Bun%0D%0APatty%0D%0ACheese%20Slice%0D%0ABacon%20Strip</Recipe>
    </MenuItem>
    …
  </Menu>
```

2.7.1. Name

The ‘Name’ attribute is the text of the item or modifier in question. Note that this *must* be an exact match to the text that is sent from the POS.

2.7.2. Group

The ‘Group’ attribute allows the user to define groups of items that can be assigned to displays all at once. Note that this value actually has no meaning to the printers; it is purely used by the configuration utility to assign several GUIDs to a filter at once.

2.7.3. FriendlyName

The ‘FriendlyName’ attribute is a string of a slightly more human-readable description of the item in question, and is not used by the printer.

2.7.4. Recipe

The recipe sub-element is optional, but if it exists it contains URL-encoded text describing the ingredients and preparation of this item. This can be brought up on screen in the kitchen if needed.