

Configuring the Wallboard

For the Inbound Call Center option on MX systems

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Introduction

The MX250 and MX30 systems supports a wallboard presentation of statistical data for the Inbound Call Center (Advanced ACD) option on the MX system. The data can be displayed in a custom format and displayed for private viewing on multiple PCs or for open room viewing from an overhead LCD or data projector. Using Microsoft Excel, the wallboard display is fully customizable with warnings and alerts which may be initiated when thresholds are exceeded.

Requirements

- At least one license for the Inbound Call Center (ICC) option on the MX30 or MX250 system
- At least one ICC group defined.
- At least one agent logged into the ICC group as a supervisor on MXIE
- Microsoft Excel on the PC that will display the wallboard
- Overhead LCD or data projector (optional)

Microsoft Excel Configuration

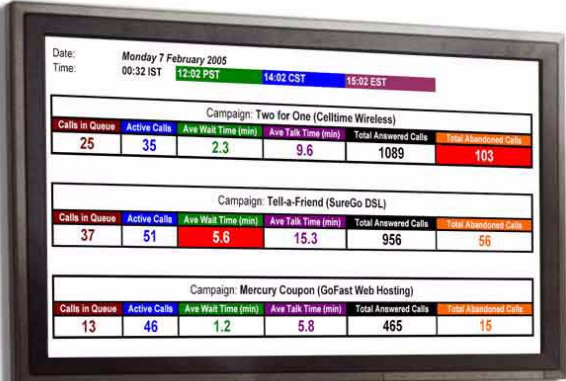
The agent who logs in as a supervisor can use MXIE and Excel to display the wallboard. An Excel file that contains the template for wallboard is required with at least two worksheets as follows:

- **One work sheet for each Inbound Call Center (ICC) group that you wish to display on the wallboard.** The name of the work sheet must exactly match the name of the ICC group that's defined in the MX system. Each worksheet contains real time values from the MX system for the related group. See "ICC Parameter Definitions" on page 1.
- **One work sheet called "Wallboard", which can be tailored to your display requirement.** This is the only worksheet that will be displayed by MXIE when engaging the Wallboard function from MXIE. The displayed values on this worksheet are references to values on the other worksheets of this file.

ICC Parameter Definitions

Listed are the parameters that can be used to create a custom wallboard.

- **Total number of calls in queue.** This parameter displays the total number of calls sent to the queue since the daily reset.
- **Maximum number of calls in queue (at one time).** This parameter displays the largest number of callers that were waiting in the group queue at one time.
- **Outbound calls (connected).** This parameter displays the total number of calls that were initiated by ICC agents since the daily reset.
- **Calls answered.** This parameter displays the total number of calls that have been answered by ICC agents since the daily reset.



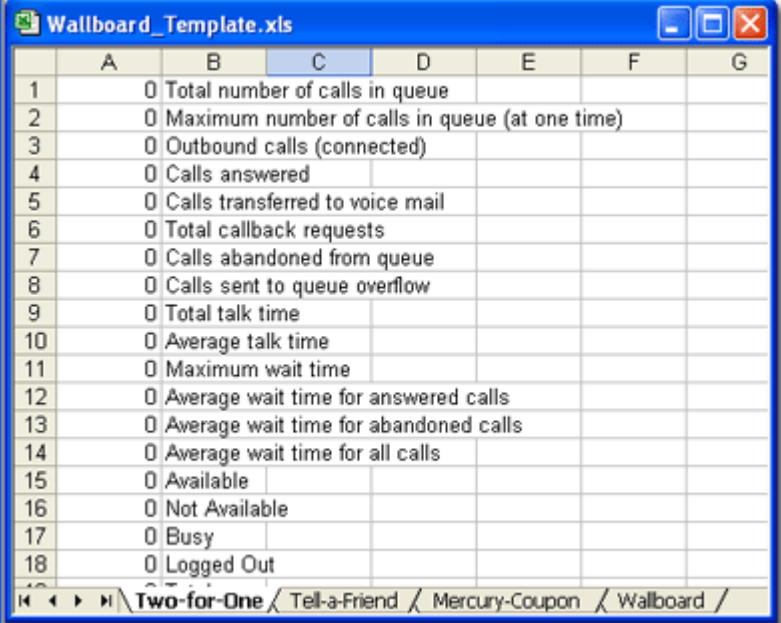
Monday 7 February 2005						
Time: 00:32 IST 12:02 PST 14:02 CST 15:02 EST						
Campaign: Two for One (Celltime Wireless)						
Calls in Queue	Active Calls	Ave Wait Time (min)	Ave Talk Time (min)	Total Answered Calls	Total Abandoned Calls	
25	35	2.3	9.6	1089	103	
Campaign: Tell-a-Friend (SureGo DSL)						
Calls in Queue	Active Calls	Ave Wait Time (min)	Ave Talk Time (min)	Total Answered Calls	Total Abandoned Calls	
37	51	5.6	15.3	956	56	
Campaign: Mercury Coupon (GoFast Web Hosting)						
Calls in Queue	Active Calls	Ave Wait Time (min)	Ave Talk Time (min)	Total Answered Calls	Total Abandoned Calls	
13	46	1.2	5.8	465	15	

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- **Calls transferred to voice mail.** This parameter displays the number of calls that have been transferred to voice mail since the daily reset.
- **Total call back requests.** This parameter list the number of callers that have requested callbacks since the daily reset.
- **Calls abandoned from queue.** This parameter list the number of callers that have abandoned their calls while waiting in the queue since the daily reset.
- **Calls sent to queue overflow.** This parameter list the number of calls that have been sent to group queue since the daily reset.
- **Total talk time.** This parameter lists the cumulative talk time of all ICC agents since the daily reset.
- **Average talk time.** This parameter list the average time per call since the daily reset.
- **Maximum wait time.** This parameter list the maximum wait time that a caller waited to talk to an ICC agent before the call was either answered by the agent or terminated by the caller.
- **Average wait time for answered calls.** This parameter list the average time, for calls answered by an ICC agent, that a caller had to wait before talking to an agent.
- **Average wait time for abandoned calls.** This parameter list the average time, for all abandoned calls, that a caller waited for an agent before terminating the call.
- **Average wait time for all calls.** This parameter list the average time, for all abandoned calls and calls answered by the ICC agent.
- **Available.** This parameter list the number of ICC agents that have a presence state of available.
- **Not available.** This parameter list the number ICC agents that have a presence state of not available.
- **Busy.** This parameter lists the number of ICC agents that have a presence state of busy.
- **Logged out.** This parameter list the number of ICC agents that have a presence state of logged out.
- **Total.** This parameter list the total number of ICC agents that are part of the ICC group.
- **Calls currently in queue.** This parameter list the total number of calls that are currently in queue.
- **Calls transferred to external number.** The number of calls that were transferred out of the queue as configured by the Queue overflow and call handling rules for the group.
- **Disconnected calls.** This parameter is the number of calls that were disconnected as configured by the Queue overflow and call handling rules for the group.



	A	B	C	D	E	F	G
1	0		Total number of calls in queue				
2	0		Maximum number of calls in queue (at one time)				
3	0		Outbound calls (connected)				
4	0		Calls answered				
5	0		Calls transferred to voice mail				
6	0		Total callback requests				
7	0		Calls abandoned from queue				
8	0		Calls sent to queue overflow				
9	0		Total talk time				
10	0		Average talk time				
11	0		Maximum wait time				
12	0		Average wait time for answered calls				
13	0		Average wait time for abandoned calls				
14	0		Average wait time for all calls				
15	0		Available				
16	0		Not Available				
17	0		Busy				
18	0		Logged Out				

Displaying the Wallboard

To specify the Excel file that contains the Wallboard, you must log into the group as a supervisor of the groups involved, and then browse for the Excel file. from the **File | Preferences | Supervisor** window. If you have not already selected the Excel file from the MXIE Preferences window and try to enable the wallboard, you will be

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	B	C	D	E	F	G
2	Date:	=TEXT(NOW(), "ddddd dd mmmm yyyy")				
4	Time:	=TEXT(NOW(), "hh:mm")				
6	Campaign: Two for One (Celltime Wireless)					
7	Calls in Queue	Disconnected Calls	Ave Wait Time (sec)	Ave Talk Time (sec)	Total Answered Calls	Total Abandoned Calls
8	=Two-for-One!\$A\$20	=Two-for-One!\$A\$22	=Two-for-One!\$A\$12	=Two-for-One!\$A\$10	=Two-for-One!\$A\$4	=Two-for-One!\$A\$7
11	Campaign: Tell-a-Friend (SureGo DSL)					
12	Calls in Queue	Disconnected Calls	Ave Wait Time (sec)	Ave Talk Time (sec)	Total Answered Calls	Total Abandoned Calls
13	=Tell-a-Friend!\$A\$20	=Tell-a-Friend!\$A\$22	=Tell-a-Friend!\$A\$12	=Tell-a-Friend!\$A\$10	=Tell-a-Friend!\$A\$4	=Tell-a-Friend!\$A\$7
16	Campaign: Mercury-Coupon (GoFast Web)					
17	Calls in Queue	Disconnected Calls	Ave Wait Time (sec)	Ave Talk Time (sec)	Total Answered Calls	Total Abandoned Calls
18	=Mercury-Coupon!\$A\$20	=Mercury-Coupon!\$A\$22	=Mercury-Coupon!\$A\$12	=Mercury-Coupon!\$A\$10	=Mercury-Coupon!\$A\$4	=Mercury-Coupon!\$A\$7

prompted to find the Excel file that will be used to display the wallboard information. MXIE will retain the reference file for future use.

Wallboard Content

The wallboard will display the real time statistics for the ICC groups that are defined in the Excel workbook. A simple text-only display or a graphical display is easily configured using the wallboard worksheet of the reference Excel file. The information is updated in real time and no future configuration is required. The PC that is used to login as the ICC supervisor can be connected to an overhead LCD projector or data projector where the wallboard window can be displayed to the desired location.

Sample Application Code

Microsoft Visual Basic for Applications (VBA) is a development technology that can be used to customize Microsoft Office applications such as Microsoft Excel.

VBA code is used in this sample to format the ICC group data that is displayed on the wallboard. The following will be illustrated in the sample.

- Show ICC data from several ICC groups

- Generate a visual indication (flashing red font) when an ICC parameter has exceeded a configured threshold

- Generate an audible indication (play a sound file) when an ICC parameter has exceeded a configured threshold

You can further customize your wallboard application by implementing other features supported by VBA.

Code for Sample Wallboard Application

VBA utilizes a Windows API to play sound files. You need to declare a function that calls the Windows API. This function is only required if you wish to add audio support to your wallboard application. The function is declared as shown below.

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This function is coded in the Excel worksheet named "wallboard".

```
Private Declare Function PlaySound Lib "winmm.dll" _
    Alias "PlaySoundA" (ByVal lpszName As String, _
    ByVal hModule As Long, ByVal dwFlags As Long) As Long
```

The **Update** procedure contains the majority of the code for the wallboard application. It is a public procedure that is called by all worksheets that are named for the ICC groups that are used by the wallboard application.

For the sample, the referenced ICC groups are named: ACDGroup1, ACDGroup2, ACDGroup3, and ACDGroup4. If you have more or less ICC groups you would edit this section of the code to include or excluded ICC groups to be displayed from the wallboard application.

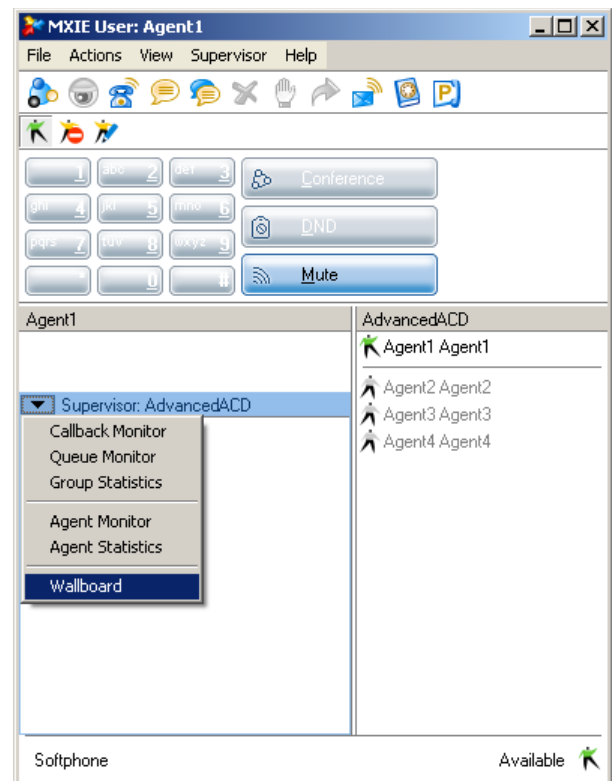
```
Public Sub Update(ByVal Target As Range)
    Dim myCell As Range
    Dim row As Integer
    Dim conditionCell As Range
    'Required so that the worksheet can be updated
    from an external source
    ActiveSheet.Unprotect
```

A select statement is used to determine which ICC group called the **Update** procedure and to update the row associated with the ICC group. The following example only displays four ICC groups. If you have a different number of ICC groups, you can add or delete the case statements as required.

```
Select Case Target.Parent.Name
    Case "ACDGroup1"
        row = 3
    Case "ACDGroup2"
        row = 4
    Case "ACDGroup3"
        row = 5
    Case "ACDGroup4"
        row = 6
End Select
```

The following **For** statement is used to determine if the condition is met to provide the visual and or audio indications.

```
For Each Cell In Target
    Select Case Cell.Address
        'VARIABLE: Calls Currently in Queue MORE HERE
        Case "$A$20"
```



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```
Set myCell = Range("C" & row)
myCell.value = Cell.value
Set conditionCell = Range("G" & row)
```

The following **If** statement is used to determine if calls are in queue and no agents are available. If so, the **FlashFont** function is called.

```
If myCell.value > 0 And conditionCell.value = 0 Then
  'add cell to global RedCell range variable
  Call AddCell(myCell)
  Call AddCell(conditionCell)
  'remember why cell is flashing. MORE HERE
  trackArray(myCell.Column, myCell.row) = "notAvailable"
  trackArray(conditionCell.Column, conditionCell.row) =
    "notAvailable"
```

The following variable is used to ensure that the **FlashFont** function is only has a single instance executing at a time. This will ensure proper flashing display.

```
If getLock() = True Then
  Call FlashFont
Else
End If
```

The **ElseIf** statement is used to determine if two calls are in queue. If so, the **FlashFont** function is called. This sample has a condition of 2 calls in queue. You can change the integer value to your specific criteria.

```
ElseIf myCell.value > conditionCell.value * 2
  And myCell.value > 0 Then
  'add cell to global RedCell range variable
  Call AddCell(myCell)
  Call AddCell(conditionCell)
  'remember why cell is flashing. MORE HERE
  trackArray(myCell.Column, myCell.row) = "tooManyInQueue"
  trackArray(conditionCell.Column, conditionCell.row) =
    "tooManyInQueue"
```

The following variable is used to ensure that the **FlashFont** function only has a single instance executing at a time. This will ensure proper flashing display.

```
If getLock() = True Then
  Call FlashFont
Else
End If
```

The **Else** statement is executed if the above condition is not met. If so, the font flashing and sound files will cease to be executed.

```
Else
  Call RemoveCell(myCell) ' remove cell from RedCell global variable
  Call RemoveCell(conditionCell)
```

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```

trackArray(myCell.Column, myCell.row) = ""
trackArray(conditionCell.Column, conditionCell.row) = ""
End If
'VARIABLE: Agents Available
Case "$A$15"
Set myCell = Range("G" & row)
myCell.value = Cell.value
Set conditionCell = Range("C" & row)
'if there are no agents available but calls in queue
If myCell.value = 0 And conditionCell > 0 Then
'add cell to global RedCell range variable
Call AddCell(myCell)
Call AddCell(conditionCell)
'remember why cell is flashing.
trackArray(myCell.Column, myCell.row) = "notAvailable"
trackArray(conditionCell.Column, conditionCell.row) =
"notAvailable"

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End If

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```

ElseIf conditionCell.value > myCell.value * 2
And conditionCell.value > 0 Then
Call AddCell(myCell)
Call AddCell(conditionCell)
trackArray(myCell.Column, myCell.row) = "tooManyInQueue"
trackArray(conditionCell.Column, conditionCell.row) =
"tooManyInQueue"

```

The following variable is used to ensure that the **FlashFont** function is only has a single instance executing at a time. This will ensure proper flashing display.

```

If getLock() = True Then
Call FlashFont
Else
End If

```

The **Else** statement is executed if the above condition is not met. If so, the font flashing and sound files will cease to be executed.

```

Else
Call RemoveCell(myCell)
'remove cell from RedCell global variable
Call RemoveCell(conditionCell)
trackArray(myCell.Column, myCell.row) = ""
trackArray(conditionCell.Column, conditionCell.row) = ""

```

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```

End If
'VARIABLE: Maximum Wait Time
Case "$A$11"
Set myCell = Range("E" & row)
myCell.value = Cell.value
'VARIABLE: Busy
Case "$A$17"
Set myCell = Range("I" & row)
myCell.value = Cell.value
'VARIABLE: Not Available
Case "$A$16"
Set myCell = Range("K" & row)
myCell.value = Cell.value
'VARIABLE: Logged Out
Case "$A$18"
Set myCell = Range("M" & row)
myCell.value = Cell.value
End Select
Next Cell
End Sub

```

The FlashFont procedure is used for two purposes when an ICC parameter exceeds a configured threshold.

1. To change the font to red and flash for all ICC data that exceeds the configured threshold.
 2. To play a sound file when any ICC parameter exceed the configured threshold.
- The notifications can be used to alert ICC agents and supervisors when any ICC parameter has exceed a configured threshold.

```

Sub FlashFont()
Dim newColor As Integer
Dim x As Integer
Dim fSpeed
newColor = 3
Static toggle As Integer 'used toggle the colors
Static toggle2 As Integer 'used toggle the wave files to play (if more than one
conditions are met)
'Must check if RedCell is null. This happens when function is scheduled to play and
a cell is
'removed from RedCell to make it null. When schedule function execute, will be using
a null
'variable and will throw error. This prevents that. Also it releases the lock so
that another
'event can call this function if condition is met.
If RedCell Is Nothing Then
Call releaseLock
Exit Sub
End If

```

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```
'changing color
  If toggle = 0 Then
    RedCell.Font.ColorIndex = newColor
    toggle = 1
    If toggle2 = 0 Then ' changing wave files if more than one file needs
to be played
      'isNotAvailable() is a function that determines if this wave file
needs to be played
      'if yes, then play it, if not then play the other one (since there
are only two files, so it has to be the one)
      If isNotAvailable() = 1 Then
        Call PlaySound(myPath & "\notavailable.wav", 0&, SND_ASYNC
          Or SND_FILENAME)
      Else
        Call PlaySound(myPath & "\toomanyinqueue.wav", 0&, SND_ASYNC
          Or SND_FILENAME)
      End If
      toggle2 = 1
    Else
      'isTooManyInQueue() is a function that determines if this wave file needs to be
played
      If isTooManyInQueue() = 1 Then
        Call PlaySound(myPath & "\toomanyinqueue.wav", 0&, SND_ASYNC
          Or SND_FILENAME)
      Else
        Call PlaySound(myPath & "\notavailable.wav", 0&, SND_ASYNC
          Or SND_FILENAME)
      End If
      toggle2 = 0
    End If
  ElseIf toggle = 1 Then
    RedCell.Font.ColorIndex = 2
    toggle = 2
  ElseIf toggle = 2 Then
    RedCell.Font.ColorIndex = newColor
    toggle = 3
  ElseIf toggle = 3 Then
    RedCell.Font.ColorIndex = 2
    toggle = 4
  ElseIf toggle = 4 Then
    RedCell.Font.ColorIndex = newColor
    toggle = 5
  Else
    RedCell.Font.ColorIndex = 2
    toggle = 0
  End If
```

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```
'Rescheduling so that this function is called in two seconds
  If Not RedCell Is Nothing Then
    Application.OnTime EarliestTime:=Now + TimeValue("00:00:02"),
      Procedure:="Sheet2.FlashFont"
  Else
    Call releaseLock
  End If
End Sub
```

The RemoveCell procedure is used to remove the RedCell global variable from the MORE HERE functions and procedures.

```
Public Sub RemoveCell(ByVal r_cell As Range)
  Dim temp1 As Range
  Dim temp2 As Range
  Dim isect As Range
  'This needs to be first because Intersect will throw an error if one of the
  Range is null
  If RedCell Is Nothing Then
    Exit Sub
  End If
  'intersect function called. If cell is not found in RedCell then exit sub
  routine
  Set isect = Application.Intersect(r_cell, RedCell)
  If isect Is Nothing Then
    Exit Sub
  End If
  Set temp1 = RedCell      ' just to save original
  Set RedCell = temp2     ' set RedCell to null
  'for each cell in RedCell, add it to the new Range if it is not the Remove
  cell.
  'if Range had a remove function, then it would be much simpler.
  For Each Cell In temp1
    If Cell.Address = r_cell.Address Then
      Cell.Font.ColorIndex = 4
    Else
      Call AddCell(Cell)
    End If
  Next Cell
End Sub
```

The AddCell is a public procedure that exposed the RedCell global variable that is used by the MORE HERE function and or procedures. The RedCell variable is used to MORE HERE.

```
Public Sub AddCell(ByVal a_cell As Range)
  'must check if RedCell is null or else Union will throw an error
  If RedCell Is Nothing Then
    Set RedCell = a_cell
  Else
```

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```

        Set RedCell = Union(RedCell, a_cell)
    End If
End Sub

```

The getLock function is used to only allow a single instance of the FlashFont function and or procedure to be called.

```

Public Function getLock()
    If myLock = 1 Then
        getLock =
    Else
        getLock = True
        myLock = 1
    End If
End Function

```

The releaseLock procedure is used to reset (unlock) the FlashFont function and or procedure.

```

Public Sub releaseLock()
    myLock = 0
End Sub

```

The isNotAvailable function is used to determine if the 'notavailable.wav' file needs to be played. This function is called from the MORE HERE procedure and or function.

```

Public Function isNotAvailable()
    For Each Cell In RedCell
        If trackArray(Cell.Column, Cell.row) = "notAvailable" Then
            isNotAvailable = 1
            Exit Function
        End If
    Next Cell
End Function

```

The isTooManyInQueue function is used to determine if the 'toomanyinqueue.wav' file needs to be played. This function is called from the MORE HERE procedure and or function.

```

Public Function isTooManyInQueue()
    For Each Cell In RedCell
        If trackArray(Cell.Column, Cell.row) = "tooManyInQueue" Then
            isTooManyInQueue = 1
            Exit Function
        End If
    Next Cell
End Function

```

Conclusion

The MX provides full collaboration, seamless integration of remote users, significant gains in productivity, and a great return on investment. It is the right communications solution for your business today and tomorrow. Based on open standards, it can grow and support many devices and accessories from multiple suppliers, giving you flexibility and choice.

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