# SBC-002-316-004
# M&P for Tie Pair Management on MDF/IDF Frames

**Abstract**

**Presented in this document are the methods and procedures to manage tie pair utilization on the MDF and IDF frames in the Central Office.**

Audience: SBC ILEC Frame Planners, Transport Equipment Engineers (TEE). The secondary audience within the SBC Local Exchange Carriers is the Network Operations/Local Field Operations (LFO) organizations.
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**Author(s):**
Mark Powers, Area Manager, Common Systems - Enterprise Technology Support
Phone: 858-886-3050 E-Mail: **mp5645@sbc.com**

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## 1 Reasons for Reissue

This section is reserved for future use.

# 2 Overview

This document has been issued to reflect Network Planning & Engineering (Common Systems Standards) strategies for the following Incumbent Local Exchange Carriers:

Southern New England Telephone (Connecticut)
Pacific Bell (California)
Nevada Bell (Nevada)
Southwestern Bell Telephone (Missouri, Texas, Arkansas, Oklahoma, Kansas)
Ameritech (Illinois, Wisconsin, Indiana, Ohio, Michigan)

This document contains the methods and procedures for the management of DS0 tie pairs between MDF and IDF frames within the Central Office.

Until now the process of tie pair management has been a hit and miss proposition, largely due to the fact that it has been a predominantly manual process. Unless the appropriate planner[1] has taken the time to periodically review current status of tie pair capacities in a wire center, it has not been unusual to be faced with held orders because capacities have been depleted unexpectedly.

The planner has had limited resources available to monitor tie pair utilization - capacity reports found within the SWITCH or TIRKS databases, or by notification from the field technicians working on the MDF or IDF. In the case of the SWITCH and TIRKS databases, the planner can periodically access the database and review the capacity status for each individual wire center.

Given the number of offices each planner is responsible for and the largely manual process required to review the tie pair capacities, it is not unusual for the capacity reviews to be delayed indefinitely. This leads to unanticipated tie pair exhaust and held orders, and the need for an expedited cable augment.

Because of these issues, a system has been developed to provide an automated process for notifying the planner when a wire center's tie pair capacities, inventoried in SWITCH, have reached predetermined levels.

# 3 Web Based Capacity Management Tool (WBCM)

## 3.1 WBCM Overview

The WBCM has been developed to provide a method of viewing current tie pair capacity information at several levels, from a global view down to the individual wire center's tie cable routes. This information is based on the tie pair inventory information contained within the SWITCH database.

The WBCM is also capable of automatically notifying the local planning group when a tie pair route within a wire center is reaching exhaust. When predetermined capacity levels on a tie pair route have been reached, the WBCM will generate an automated e-mail notification to the appropriate planning group to trigger a cable augment job.

**NOTE:** The WBCM is intended as a tool meant to provide a pro-active notification system to avoid the last minute scramble to get an augment job done to avoid held orders. It is not meant to change the local processes for augmenting the cables. The responsibility for writing the jobs and carrying out the work will not change.

[1] Because of the differences in titles and responsibilities between the various SBC ILEC's, this document will use the title "Planner" as a generic reference to the appropriate person responsible for tie pair capacity monitoring and management within each ILEC.

The information within the WBCM is only as good as the data within SWITCH. In order for this system, or any other system of this type, to be of any benefit, it is imperative that the field forces be encouraged to refrain from the "pick a pair" activity that has been practiced in the past.

## 3.2 SWITCH Threshold Reports

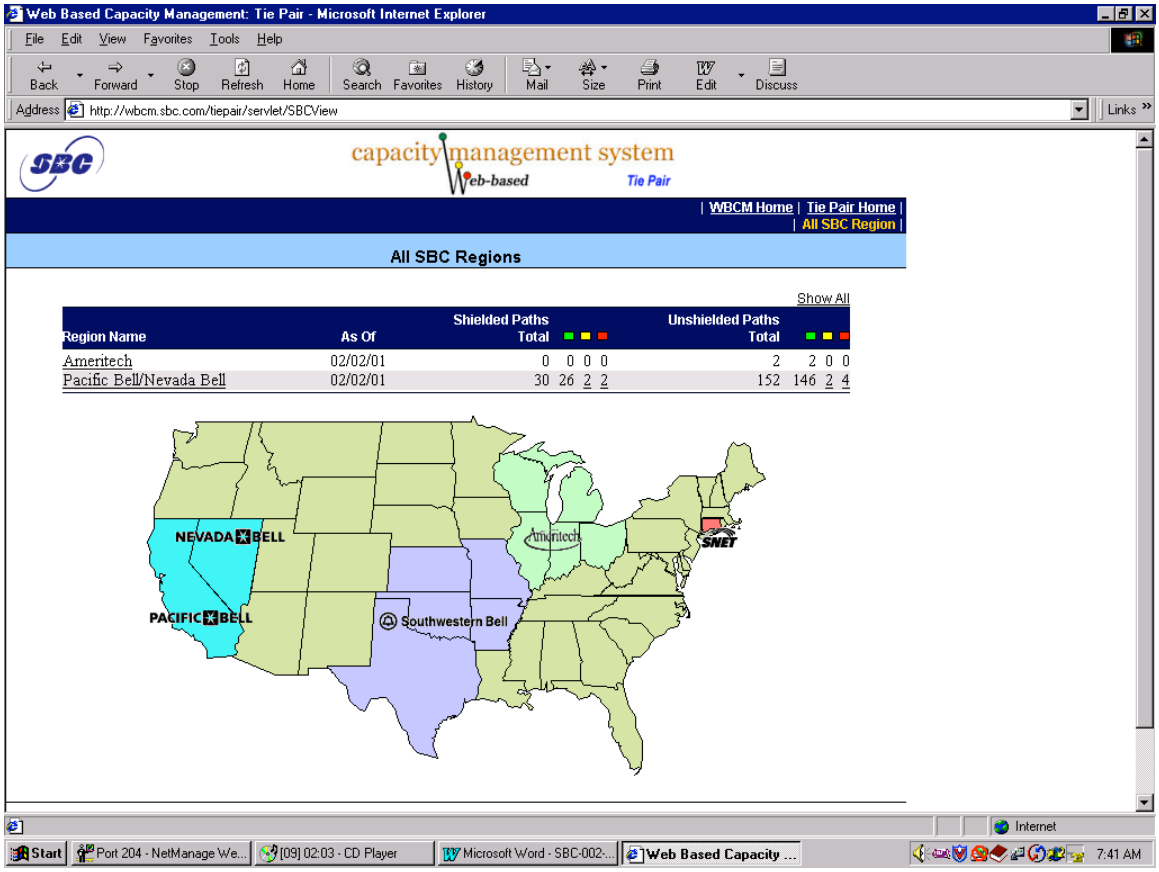
As stated above, the capacities reported in the WBCM represents the tie cable inventories maintained within SWITCH.

For the WBCM to receive this information from SWITCH, a Threshold report must be created in SWITCH for each tie pair route in a wire center. The SWITCH Threshold report provides the WBCM with the capacity and utilization information on each tie cable route within the wire center. For detailed information on creating Threshold reports, see the "Job Aid for Creating SWITCH Threshold Reports".

The Threshold report is set to update the WBCM weekly. The weekly reports are retained in the WBCM to provide a trending report over time, to assist in forecasting for future cable augments.

## 3.3 Accessing and Viewing the WBCM

The WBCM may be accessed on the corporate Intranet. The URL address is http://wbcm.sbc.com/. The home page of the WBCM offers a number of selections to choose from. Click on the "Tie Pairs" icon. This will take you to the global screen that displays a map of the individual regions of SBC.



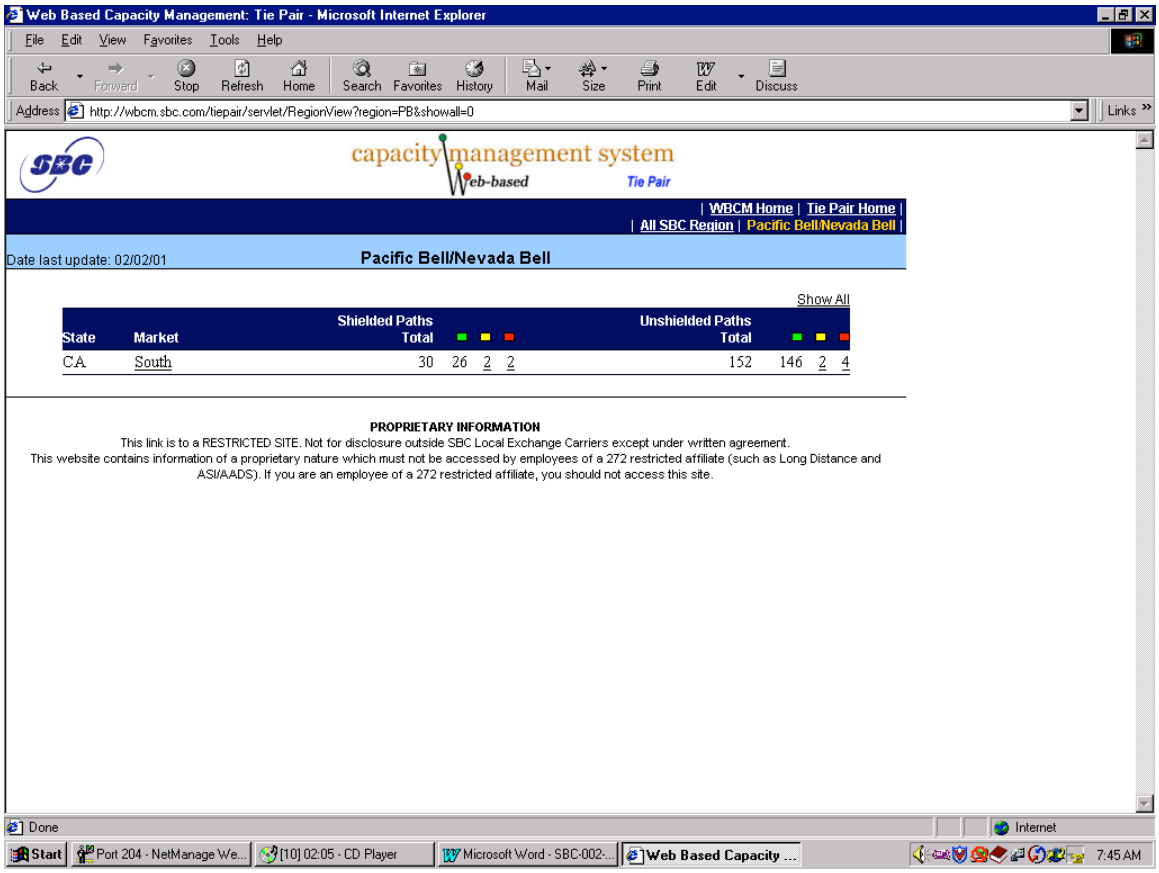
This view is helpful for getting a quick rundown of the current capacity status for any of the four regions.

The global view provides a summary of the total tie pair routes currently inventoried in the WBCM. The inventories are separated into shielded and non-shielded categories. The information is further broken down into status fields –

- Green – Number of offices whose current utilization is less than 65% of total available pairs.
- Yellow – Number of offices whose utilization is between 65% and 75% of total available pairs.
- Red – Number of offices whose utilization is over 75%.

The yellow and red categories provide links to jump quickly to the specific wire centers that have triggered the warning.

From this screen the user may jump to any one of the four regions and view information for that region, much as it is displayed in the global view.



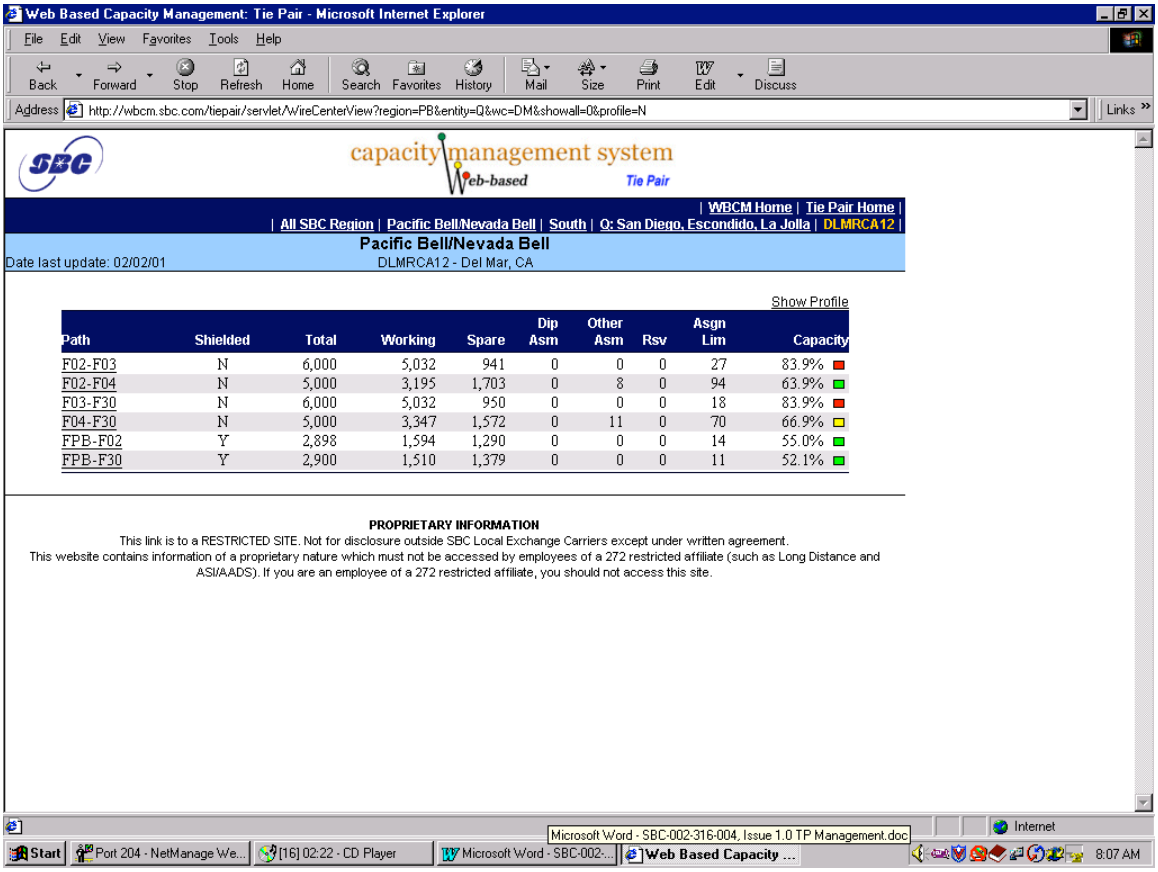

This screen will break down the information by market areas. The status links on this screen work in the same manner as the global screen. Clicking on a market area will take the user to the next screen, which displays the list of SWITCH entities for that market area.

The hierarchy of the views is as follows:

Global View
- Regional View
  - Market Area
    - Entity List
      - Wire Center List
        - Wire Center

## 3.4 Wire Center Information

Within the wire center route summary screen, a list of tie pair routes is displayed. These routes are divided between shielded and non-shielded ties. Once again, the status of the routes is displayed.



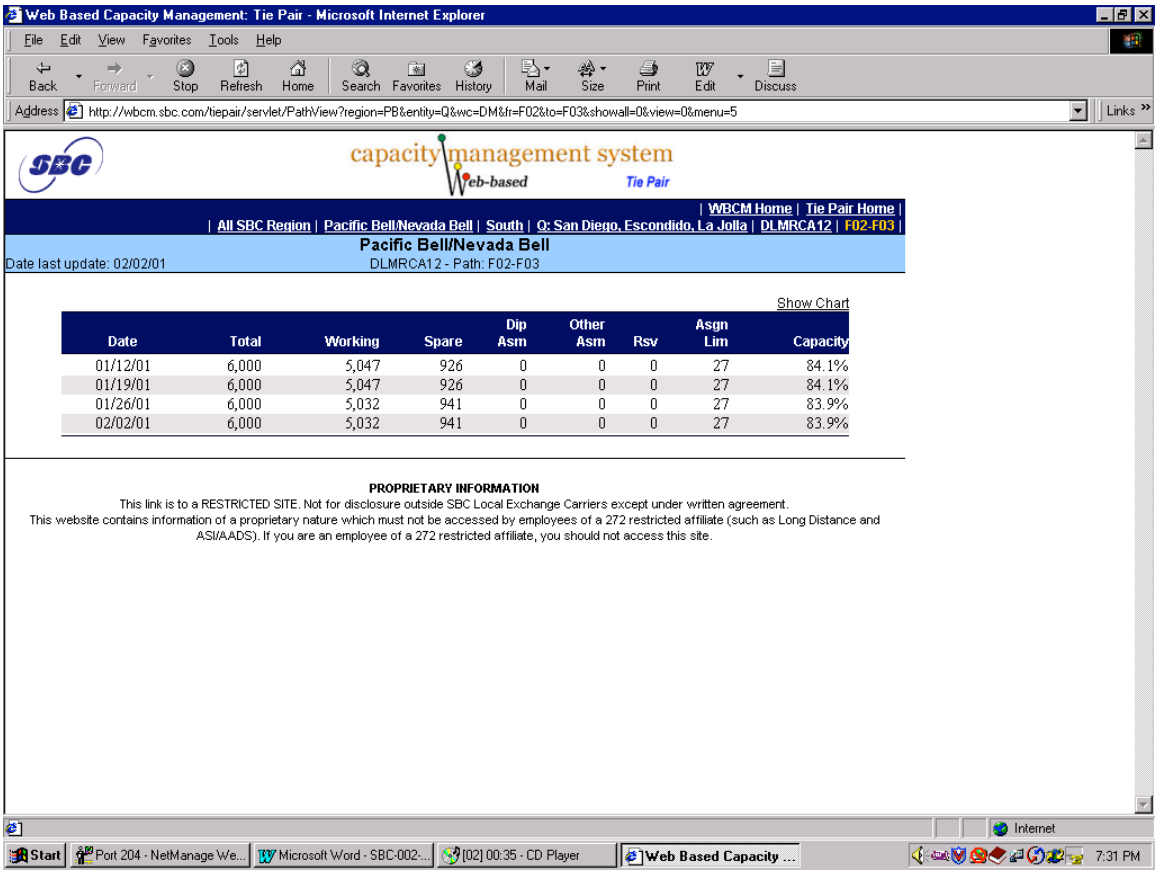

Note that SWITCH deals with tie cables based on tie pair *routes* rather than by cable names. A route is identified by the name of the frames that are interconnected. The route may contain one or more tie cables. In the screen above, the first route is identified as F02 – F03, with 6,000 total pairs. These 6,000 pairs could be made up of one 6,000 pair cable, or it could be made up of any combination of tie cables totaling 6,000. As far as SWITCH is concerned, the name of the tie cable is irrelevant.

The information provided on this screen includes:

- SHIELDED: Y or N to indicate whether the cable is shielded or not.
- TOTAL: Total number of pairs inventoried in SWITCH.

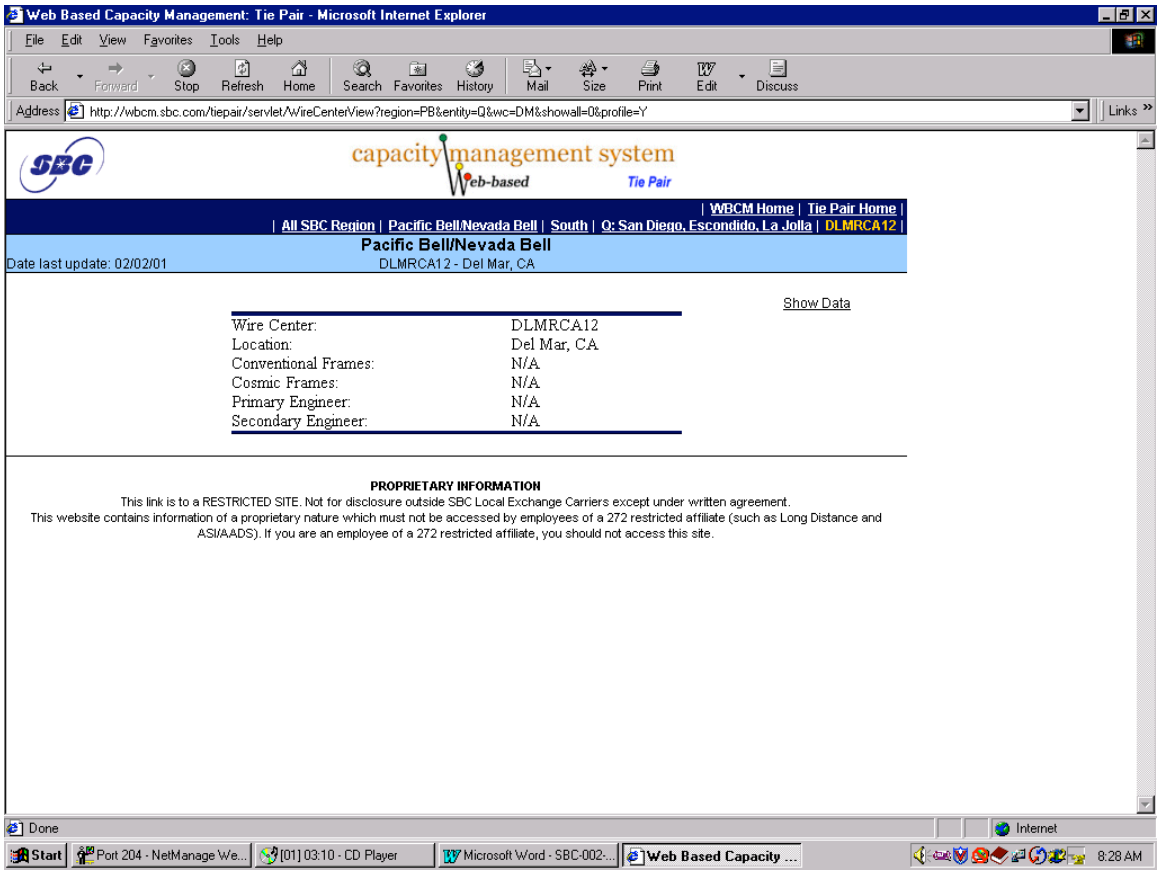
- WORKING: Total number of working or assigned pairs.
- SPARE: Number of pairs available for assignment.
- DIP ASM: An assembly that is part of a DIP (dedicated inside plant circuit).
- OTHER ASM: This circuit is associated with an Assembly, other than a DIP (in this scenario).
- RSV: the circuit is Reserved.
- ASGN LIM: This circuit has an Assignment Limitation on it. There are a lot of assignment limitations that a circuit may be assigned, just to name a few: tst (test), ran (random access number), ms (mass call), etc.

Clicking on the route name will jump you to a screen that displays the capacity levels reported in past Threshold reports. As this report grows, this information will become invaluable in helping to determine growth patterns, which will in turn be helpful in forecasting growth for future augments.




Above the Capacity column is a link, ”Show Chart”. This link will take the user to a page that shows a line chart reflecting the usage trend as described in the previous screen.

On the wire center route summary page is a link above the Capacity column, ”Show Profile”. This link will take the user to a page that shows some generic information about the wire center.




The information provided on this screen includes the name of the wire center, the location, the number of modular and conventional frames, and the name of the Common Systems Area Manager responsible for this office. The individual planners responsible for the office will fill in some of this information when they access the page.

This page is meant to be a quick reference site for miscellaneous information about the individual wire center. Additional information will be included on the profile page as time goes on.

## 3.5 WBCM E-Mail Notification Process

When a tie pair route within a wire center has reached a specific level, an e-mail notification will be sent to the planning group responsible for that office. The message will be sent to a group mailbox or public folder associated with each Common Systems group. Each group will be responsible for monitoring the mailbox or folder weekly, for messages.

The capacity triggers for these messages, and the actions required are as follows:

- **65%** - The status will change to yellow. An e-mail notification will be sent to the appropriate group. The planner will have ten days to respond. The only response needed is an acknowledgement that the message has been received. If there is no response in that time, the status will change to red and a notification will be sent to the Common Systems Area Manager for that office. This notification is only meant to be a “heads-up” to the planner that the office may need a little closer monitoring. The early warning may become important if it is determined that a frame augment may be needed to support the cable augment. This should provide sufficient time to get the frame built in preparation for the cable augment.
- **75%** - The status will change to red. The notification will be sent to the appropriate group. The planner will have ten days to respond. The only response needed is that the message has been received. If there is no response in that time, a notification will be sent to the Common

Systems Area Manager. This message is meant to trigger the start of work to develop a plan for augmenting the cable and issuing a job to do so.

- **85%** - The status is still red. The notification will be sent to the appropriate group. The planner will have ten days to respond. The response needed is that the message has been received and should include a job number and the expected RFS (Ready for Service) date. If there is no response in that time, a notification will be sent to the Common Systems Area Manager. This message is meant to ensure that action has been taken to augment the cable in a timely fashion.
- **95%** - The status is still red. The notification will be sent to the appropriate planner and Area Manager. There will also be an escalation notification sent to the appropriate NP&E General Manager. If it has not yet been completed, the job should be expedited to ensure that there will be no held orders due to lack of tie pairs.

Just to reiterate, this system is merely a tool to provide an early warning of tie pair exhaust. It is not meant to dictate or change the local process for augmenting the tie cables.

# 4 Tie Cable Placement Strategy

## 4.1 Shielded Tie Cable

The routing of xDSL services over tie pairs requires shielded cabling. Ensure that the IDF is properly grounded and terminate the tie pair ground leads to the IDF ground.

It is recommended that all tie cables placed, on a going forward basis, be shielded. This is considered to be cheap protection from some spectrum interference issues. There is a great deal of uncertainty as to the types of services that may be placed on the frames. Using shielded tie cables will assist in mitigating some of the potential spectrum interference concerns.

## 4.2 Determining Tie Pair Levels – New IDF Deployment

When placing tie cables to a newly installed IDF, use the table below to determine the recommended number of tie pairs to use for the initial deployment. The initial deployment of tie pairs will be based on the anticipated number of terminations to be placed on the new frame, and on the type of frames being deployed.

When the configuration is a conventional to conventional interconnection and the number of terminations forecasted for the new IDF is less than 10,000, the number of tie pairs recommended for placement will be 20 percent of the total forecasted terminations. Greater than 10,000 terminations calls for an initial tie pair deployment of only 10 percent of the total forecasted terminations.

When using COSMIC or Modular Frames interconnected to a conventional frame, a factor of 1.3 needs to be applied to ensure that xDSL services are properly distributed throughout the Modular Frame. This will permit the successful introduction of this service on a Modular frame without having the need to use IntraMod Tie Pairs where Spectrum Interference issues are present with other Special Circuits. DO NOT USE IntraMod Tie Pairs for xDSL services, including HPFL (Line Sharing).

| Frame Type Interconnections | Number of IDF Terminations | Ratio of Tie Pairs per IDF terminations needed |
|---|---|---|
| Conventional - Conventional | < 10,000 pairs (100 blocks) | 20% |
| Conventional - Conventional | 10,001 – 100,000 pairs | 10% |
| COSMIC[1] - Conventional | < 10,000 pairs (100 blocks) | 26% |
| COSMIC - Conventional | 10,001 – 100,000 pairs | 13% |

[1] COSMIC is a frame manufactured by Avaya Communications (formerly Lucent Technologies). This name used here is generic for any COSMIC/ESS/Modular (non-conventional frame) manufactured by Porta, Corning Cable Systems, Avaya Communications or Marconi. Porta is no longer standard.

## 4.3 Determining Tie Pair Levels – Augments

When it is determined that the tie cable interconnect is reaching exhaust an augment will be required. Tie Pair provisioning should be based upon actual forecasts and measured usage on frames. The recommended amount of pairs to be provisioned would be equivalent to eighteen months of forecasted growth.

> In many cases, sufficient existing shielded tie pair capacity already exists interconnecting the two Frames. An evaluation should be made to determine if these are suitable for use (complements do not have T1 or HDSL in them) and they are provided in the correct areas on the Frames. After proper evaluation, these tie pairs could be used and converted from TIRKS to SWITCH management control and reduce or mitigate the need for the installation of additional tie pairs.

Note: Terminations to any Universal Modular Distributing Frame (UMDF), COSMIC/ESS/Modular Frame requires the termination ratio to be increased by 1.3 for the proper pair spread over multiple lineups for the short jumper plan deployment. A minimum presence of 1 connecting block must be placed on each modular frame lineup in the middle. DSL jumper lengths should not exceed 10 MOD's on each lineup.

## 4.4 Inventorying Tie Cables

As has been noted earlier, SWITCH does not differentiate tie cables based on their names. SWITCH bases its assignment strategy on the cable *routes*. The routes will also determine the function of the cable. It's for this reason, that it's very important to properly inventory the cables within SWITCH.

### 4.4.1 Pseudo and Physical Frames

SWITCH is incapable of differentiating between shielded and non-shielded cable. Because of this, a process was developed to "trick" SWITCH into providing flow through assignments for Line-Sharing and, in some cases, xDSL type service orders.

The trick involves the use of pseudo frames in the SWITCH database. Pseudo frames exist only in the SWITCH database and are a mirror image of the IDF where shielded tie cables are terminated. The pseudo frame will be identified in the database using the naming convention of a "P" designation at the front of the frame name rather than an "F". For example, if the IDF is identified as F30, the pseudo frame will be named P30.

To better understand how a pseudo frame works, it'll be beneficial to understand how SWITCH assigns tie pairs.

When SWITCH receives a service order for assignment, it first identifies the individual network elements needed to complete the circuit. In the case of a Line-Sharing order, the individual components needed will include an OE circuit, an OSP cable pair, the Splitter terminations – MEOE, MECP, MEDT, and the CLEC MEDD. See the drawing following the example.

For this example, the MDF is named F01, and the IDF is named F30, therefore the pseudo frame is P30.

Physically, the OE and OSP cable are found on the MDF – F01. The MEOE, MECP, MEDT, and the MEDD are physically found on the IDF – F30.

In the database, the OE and OSP cable are inventoried on the F01 frame. The MEOE, MECP, MEDT and the MEDD are inventoried on the pseudo frame – P30.

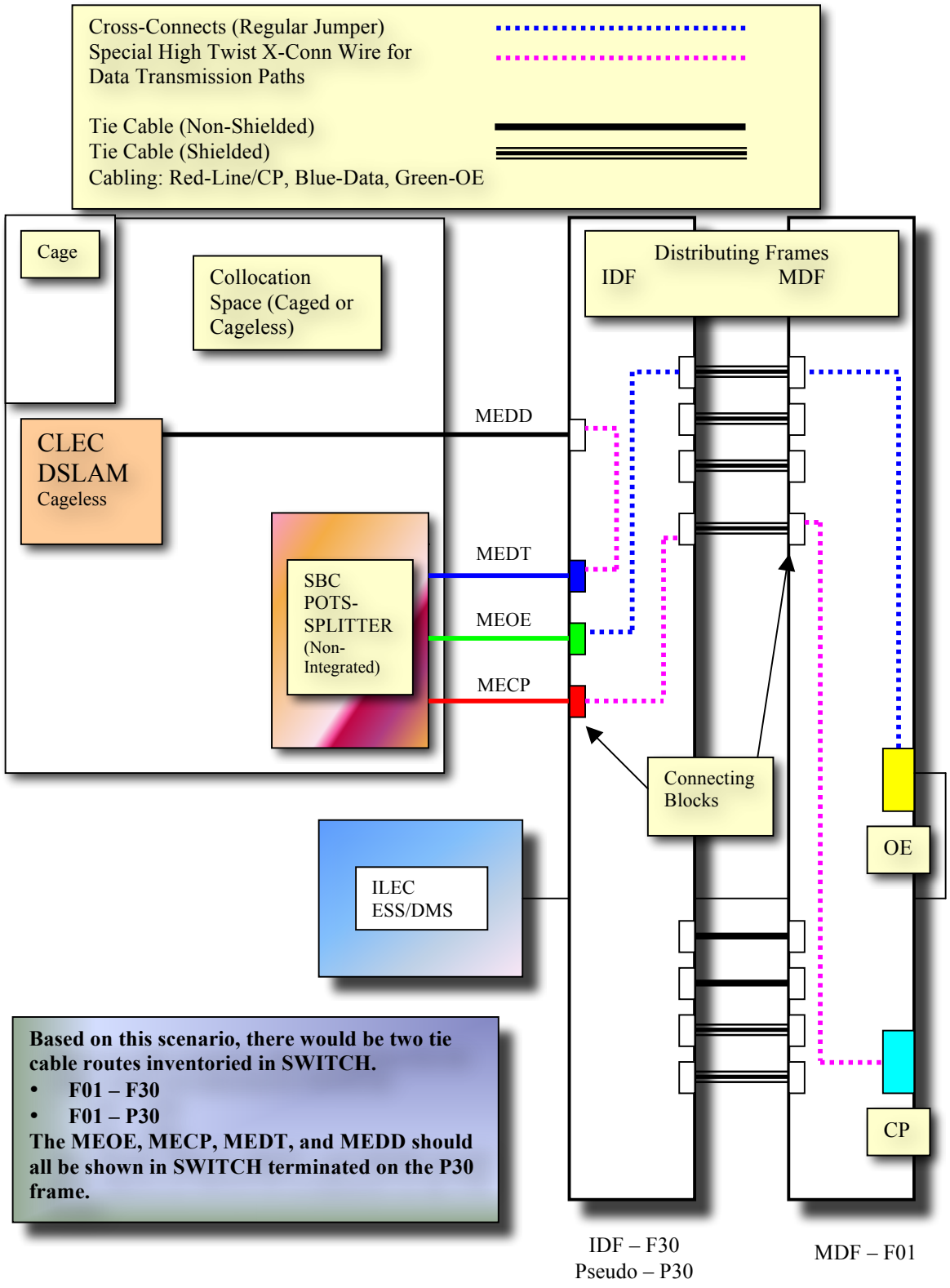
Once SWITCH has identified where the individual components are located within the office – based on the database inventory, it will begin to search its tie pair route tables to determine if there is a route between the two frames – F01 and P30. If a route is identified, it will assign the appropriate tie pairs. If there are no routes identified, the order will drop out to be assigned manually.

*Note: This is a very high level description of the process that SWITCH uses to make its pair selections. The actual algorithm is much more complex.*

Based on this example, it becomes clear that how a cable is inventoried will determine its function. In the database, if a cable is routed between two physical frames, the cable will be assigned for regular VF type circuits. If a cable is routed between a physical frame and a pseudo frame, the cable will be used for circuits that require a shielded tie pair, such as a Line Sharing circuit.

The naming conventions of the cable have no bearing on how the cable is used within SWITCH. The route of the cable inventoried in SWITCH will determine its function. This is why the capacity reports provided by the WBCM reflect total route capacities rather than individual tie cable capacities.

Naming conventions for the various tie cables are still being refined. Because of differences in processes between the different ILECs, cable naming will not be discussed in this issue of the document.



# 5 References

For further information or electronic copies of this document and related information, visit either of the internal SBC Local Exchange Carrier Web (internal) sites:
http://home.sbc.com/commonsystems/ or http://apex.sbc.com

| Document | Description | Issue & Date |
|---|---|---|
| SBC-002-316-006 | Line Sharing Deployment M&P | Issue 7.3, Dec 2000 |
| SBC-002-316-009 | ADSL for the Central Office M&P | Issue 12, Nov 2000 |
| SBC-002-316-003 | Frame Forecast M&P | Issue 7, Jan 2001 |
| Job Aid for Creating SWITCH Threshold Reports | | Issue 2, Jan 2001 |
| Infrastructure Deployment Guidelines (IDG), Switching, Tab 11 | Subscriber Main Distributing Frames | Jul 2000 |

# 6 Contacts

Steve Weinert, Associate Director-Enterprise Technology Support (Common Systems), SBC Services Inc.
(214) 858-1355, E-Mail: sw0872@txmail.sbc.com

Mark Powers, Area Manager-Enterprise Technology Support (Common Systems), SBC Services Inc.
(858) 886-3050, E-Mail: mepower@msg.pacbell.com.

Rich Riggs, Area Manager-Enterprise Technology Support (Common Systems), SBC Services Inc.
(913) 676-1949, E-Mail: rr8376@ksmail.sbc.com.

WBCM Administrators
Primary Administrator Contact:
Laurie King, Manager – Enterprise Technology Support – (New Technology Integration)
(925) 901-8225, E-Mail: lgking@msg.pacbell.com

Secondary Administrator Contact:
Peter Wong, Manager – Enterprise Technology Support – (New Technology Integration)
(925) 823-4539, E-Mail: pw5674@msg.pacbell.com

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SBC Services Inc.
3 Bell Plaza, Rm 1610.A4
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