

**BEFORE THE  
FEDERAL COMMUNICATIONS COMMISSION  
WASHINGTON, D.C. 20554**

In the Matter of:	)	
	)	
	)	
DEPLOYMENT OF WIRELINE SERVICES	)	CC Docket No. 98-147
OFFERING USING ADVANCED	)	
TELECOMMUNICATIONS CAPABILITY	)	
_____	)	

**COMMENTS OF SUPRA TELECOMMUNICATIONS  
REGARDING PROPOSED RULE-MAKING**

(Non-Confidential)

Dated: September 24, 1998

Submitted By:

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## **I. INTRODUCTION & SUMMARY**

1. Supra Telecommunications & Information Systems, Inc. (“Supra”) is a minority-owned Alternative Local Exchange Carrier (“ALEC”) duly certificated in 10 states to perform local and long distance service as a result of the Telecommunications Act of 1996. Supra is pursuing a very difficult course in implementing its plans to become a major nationwide company in the telecommunications industry by providing new and innovative local and long distance services at lower and competitive rates to customers. Pursuant to FCC 98-188, Supra is providing the following non-confidential comments regarding the FCC’s proposed rulemaking relating to the Deployment of Wireline Services offering Advanced Telecommunications Capability. As a small ALEC in a field of giant monopolies, Supra asks that this Commission give consideration to the following comments.

## **II. COMMENTS**

### **A. Separation Requirement for Non-Incumbent LEC Status**

2. Supra would like the FCC to be more explicit and detail on what it means for an affiliate to “operate independently” from the incumbent. For example, Supra believes that an affiliate should not be able enjoy any joint marketing/advertising such as direct mail campaigns, billing inserts or database sharing. An affiliate should not be able to exchange other business and customer information with the incumbent or be involved in joint procurement arrangements with the incumbent (particularly with respect to advertising, marketing and equipment procurement). An affiliate should not be able to identify itself as an affiliate of the incumbent or otherwise use the name of the incumbent, particularly for advertising and marketing purposes. Any OSS Systems or other informational/database systems made available to the affiliate should also be made available to all ALECs.

3. There should also be limit on the amount of capital which an incumbent can use to establish the affiliate, and that limit should be tied to the average size of the ALECs competing in the incumbent’s territory adjusted by the estimated marketshare of each particular ALEC. Alternatively, the amount of capitalization allowed can be tied to the median value of the ALECs currently competing in the incumbent’s territory. Fairness can only be ensured by limiting the capital available to the affiliate in a manner which restricts the size of the affiliate to the existing actual competition in the incumbent’s territory. Finally in the event the affiliate acquires too great of a marketshare in providing “advanced services” (i.e. such as more than 2% of the nation’s subscriber lines), then the affiliate should be deemed the same as the incumbent.

### **B. Transfer of Facilities**

4. The ability to acquire facilities is directly related to the amount of capital available to the affiliate. In this regard, an incumbent should not be able to circumvent its status as an incumbent by simply dumping a large amount of capital into the affiliate for the purpose of acquiring facilities which otherwise would have simply been acquired by the incumbent.

Therefore, unless there are capital restrictions placed upon the affiliate that limit the affiliate to the median size of the competition within the territory (or any other fair measure), then an affiliate who acquires facilities should still be deemed an assign of the incumbent LEC.

5. Moreover, at no time should an affiliate be deemed to not be an assign of the incumbent LEC simply because the affiliate acquires facilities independent of the LEC. Such a rule would be open to abuse by the LEC's. Supra also believes that any transfer or sale from an incumbent LEC to an affiliate of local loops, central offices or any other equipment, property or other assets which are not solely used to provide "advance services", should make that affiliate an assign of the incumbent LEC.

6. With respect to a "de minimis" exception, such an exception should be included in the capitalization limits described above and therefore ultimately be limited by such capitalization limits. Moreover, if allowed, the "de minimis" exception should only apply to equipment specifically used solely for advanced services and with respect to equipment already installed and/or paid for as of the date in which the rule is adopted.

### **C. Collocation Issues**

7. Supra agrees with ALTS position that the rules adopted in the *Local Competition Order* regarding collocation do not go far enough. The incumbent LECs have made collocation impossible for the ALECs. As a matter of fact, the incumbent LECs have designed collocation policies that will assure that new entrants do not achieve the desired speed to market and the removal of economic barriers envisioned by the Congress. Supra has suffered a great deal in its efforts to physically collocate in the central offices of BellSouth.

8. The incumbent LECs (ILECs) have designed their collocation requirements to thoroughly and completely impede both collocation and competition. For example, the ILECs calculation of collocation costs is simply a barrier to entry, while the method of implementing the provisioning time of collocation is another very serious problem. One particular burdensome tactic is to require multiple levels of inter-departmental involvement designed to slow the approval process to a snail's pace. Supra's experience has been that ILECs then generally only provide ALECs with "must accept" proposals regarding collocation that either are grossly unfair and unreasonable, or otherwise require state commission intervention. The inevitable result is to inhibit competitors from seeking collocation. The entire process is so daunting that quite a number of ALECS have decided to stay away from any type of collocation arrangement. Although not specifically requested, one such proposal that Supra would suggest falls in line with a recent Florida Public Service Commission (FPSC) which in essence states that the collocation process should be completely within three (3) months absent some hard evidence from the ILEC that would justify a longer delay. Accordingly, Supra would ask that the FCC consider a rule requiring collocations to completed within three (3) months absent justification for a longer delay. History has shown that delays in the ILECs collocation procedures are intended to and do create very effective barriers to entry. Indeed, BellSouth (the ILEC which Supra has had to deal with) has itself recognized that incumbents have the power to simply delay and stall interconnections in bad faith in order to discourage competition. In this regard, BellSouth articulated the nature and degree of this problem and

the ILEC's entrenched advantage when BellSouth sought to compete in the local market of another ILEC, stating as follows:

*The timing of, terms and conditions for, and pricing of, interconnection determine which firms capture the available rents. Hence, the dominant incumbent, if it fails to accept the benefits which flow from a competitive market, can and will rationally use interconnection negotiations to delay and restrict the benefits of competition. This enables it to perpetuate the rents which it obtains as a successor to a monopoly franchise at the expense of competition and innovation. A dominant incumbent can limit both the scale and scope of its competitors, raising their costs and restricting their product offerings. In addition, it can divert or delay competition and innovation to protect its current revenues and give itself time to prepare and introduce similar products or service by exercising control over standards for connect and local numbers . . . It has very powerful incentives to include monopoly rents in the price of complementary network services in order to perpetuate and increase its monopoly profits. It similarly has very powerful incentives to reduce the ability of its competitors to claim market share.<sup>1</sup>*

Adoption of National Standards

9. Supra believes that the adoption of National Standards will help eliminate potential excuses that ILECs will inevitably give in order to stall and delay the collocation process. Supra's experience has been that every start-up ALEC must fight a mighty battle with the ILEC over every single detail from resale to collocation. The ILECs are very good at throwing around technical impediments that National Standards might help eliminate. Although it might take time to develop National Standards, Supra is of the opinion that National Standards will ultimately encourage a speedier deployment of advanced services by increasing predictability and certainty. The adoption of some National Standards will ultimately assist to foster competition by reducing some of the contentious issues between the ILECs and ALECs which in the end simply delay matters and if such issues are ever resolved, must usually be resolved by the governing Public Service Commission.

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<sup>1</sup> BellSouth New Zealand, Submission: Regulation of Access to Vertically-Integrated Natural Monopolies, A Discussion Paper, September 29, 1995 at 2 and 10 (emphasis added)

### Collocation Of Equipment

10. In the *Local Competition Order*, the FCC concluded that ILECS need not permit the collocation of other types of equipment, including switching equipment and equipment used to provide enhanced services as stated in § 51.323 (c). Supra believes that this position was a mistake because it opened the door to ILECs contesting on a case-by-case basis the functionality of various pieces of equipment. In fact Supra has encountered this very delay tactic by BellSouth when seeking to collocate equipment with multiple potential uses. Debating the potential uses of equipment simply gives ILECs an opportunity to delay the collocation process. Accordingly, Supra believes that the FCC should allow the collocation of equipment which is used for interconnection and access to unbundled network elements even if the equipment also includes switching functionality. Certainly this move would encourage the use of newer and more cost-effective integrated equipment (which incidentally is often the same equipment that the ILECs have or are in the process of installing). Supra believes that maintaining restrictions which prohibit collocating switching equipment only serves to limit an ALECs choices of equipment and give the ILECs a competitive advantage and an excuse to delay collocation. Supra also agrees that ALECs should also be allowed to collocate any of the same types of equipment that an ILEC might allow its advanced services affiliate to collocate.

11. Apart from the issue of integrated equipment, Supra believes that as a whole ALECs should also be allowed to collocate switching equipment. In order to genuinely compete in this business, and if all Americans are to have meaningful access to these advanced services, there must be a solution to the problem of the "last mile." No matter how fast the network is, if the connection between the network and the end-user is slow, then the end-user cannot take advantage of the network's high-speed capabilities. For any telecommunications service provider to be able to compete for the "last mile" (and thus truly bring competition into the picture), such provider must invest in switching equipment (i.e. the class 5 switch). The most logical location for the new entrant to locate such equipment is in a central office. Not only is the cost of building a central office high (as much as \$3 million or more), the time to complete such projects is lengthy. Thus prohibiting the collocation of switching equipment effectively eliminates the start-up ALEC (without the resources of the ILEC) from being able to compete against the ILEC for that "last mile". In ¶ 11 of the *Local Competition Order*, the FCC ordered that the most significant economic impediments to efficient entry into the monopolized local market must be removed. The local competition provisions of the Telecommunications Act of 1996 (TA) require that the economies of density, connectivity, and scale be shared with new entrants. Supra believes that in order to truly develop competition in the local exchange services market, telecommunication service providers must be allowed to collocate any type of equipment that is necessary in order to provide those services that meet the subscribers needs and demands.

12. In order to have access to unbundled network elements and properly interconnect, new entrants must be able to place their switching equipment at the premises of the ILECS. There are problems of local tandem interconnection, network blockages and trunking when ALECS are required to place their switches outside the central office. Naturally this leads to network problems and inefficiency and gives the ILECs an unfair advantage. Moreover,

ILECs are actually encouraged by these restrictions to maximize these problems experienced by ALECs (particularly with respect to trucking and network blockages). Section 706 (a) of the TA states that:

***The Commission and each State commission with regulatory jurisdiction over telecommunications services shall encourage the deployment on a reasonable and timely basis of advanced telecommunications capability to all Americans (including, in particular, elementary and secondary schools and classrooms) by utilizing, in a manner consistent with the public interest, convenience, and necessity, price cap regulation, regulatory forbearance, measures that promote competition in the local telecommunications market, or other regulating methods that remove barriers to infrastructure investment.***<sup>2</sup>

One of the effective measures that will promote competition in the local telecommunications market is the removal of limitations on the types of equipment that telecommunication service providers can collocate in the facilities of an ILEC. This issue is very important to Supra. If the FCC is serious about promoting competition, an immediate approval must be given to this suggestion. Accordingly, Supra believes that the FCC should not restrict or limit the type of equipment which a telecommunication service provider should be allowed to collocate in an ILEC's facilities.

#### Allocation Of Space

13. Supra agrees that if an incumbent LEC offers a particular collocation arrangement, such a collocation arrangement should be presumed to be technically feasible at other LEC premises. On security concerns in the cageless collocation environment, Supra is of the opinion that concealed security cameras or badges with computerized tracking systems should provide sufficient protection. Supra also believes that security measures should vary, or be allowed to vary, by central office. For unstaffed offices in remote areas, security cameras and computerized tracking systems should suffice. Other comments which Supra has to lower the cost of collocation include the following:

- Allowing only one application fee for multiple collocations. The present practice of BellSouth is to require an application fee of \$3,850 (in Florida and which varies by state) for every collocation application; regardless of how many collocation requests are made at one time.
- ALECs must be allowed to select the contractor that will construct the collocation space. The situation that exists now is burdensome for ALECs.
- ILECs should be required to process collocations within a certain time period unless the ILEC can demonstrate legitimate reasons why the collocation is being delayed. In this

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<sup>2</sup> The Telecommunications Act of 1996, Section 706 (a). Emphasis placed.

regard, Supra would ask the FCC to adopt a three month time period (for both virtual and physical collocation) as the standard which ILECs must follow absent extenuating circumstances. This time period was implicitly adopted by the Florida Public Service Commission in its Order No. PSC-96-1579-FOF-TL dated December 31, 1996.

- In order to maximize the usage of space in the central office, there is a need to require ILECS to remove obsolete equipment and non-critical office space that can easily be left in the central office to give an appearance that space is limited. Currently, ILECs use desks, chairs, workstations, cupboards, old equipment and all forms of tricks in order to warehouse space in the central office. Moreover, since switches can be monitored from remote locations, there is generally no need to have work stations in a central office. Supra asks the FCC to establish rules that can prevent further use and abuse of these tactics. In this regard, an ILEC should only be allowed to keep items in a central office which are absolutely necessary as opposed to simply desirable.

#### Space Exhaustion

14. Supra believes that an ILEC that denies a request for physical collocation due to space limitations should provide both the state commission and the competing provider with a blue print of the detailed floor plan of that central office and permit the competing provider to physically tour the premises. In addition, if the ILEC is found to have denied the collocation request in bad faith, a fine or other damages should be awarded to the competing provider. Supra would suggest a liquidated damage fine in the sum of \$100,000 (One hundred thousand dollars) to serve as a deterrent to ILECs who are fond of engaging in this type of bad faith behavior. Supra agrees with the report described in ¶ 147 of FCC 98-188; however, the report should also include details of additions planned in that central office in the immediate future. That information is necessary for an ALECs planning purposes. On the issue of space warehousing, Supra believes that the commission should make ILECs relinquish space held for future use prior to denying physical or virtual collocation. In other words, actual equipment orders or commitments should take precedence over an ILEC's nebulous future planning use. This is absolutely crucial to assure parity and fair treatment. Since ALECS will be investing in the deployment of advanced services equipment for the provision of voice and data services, the central office space requirement of the ILECs will be greatly reduced by that factor.

### **D. Local Loop Requirements**

#### Loops And Operations Support Systems

15. The importance of efficient operations support systems (OSS) functions for pre-ordering, ordering, and provisioning loops and services cannot be overstated. What has happened to date is that the ILECs have provided OSS that is impossible to use by the ALECs and has deliberately been designed to create problems for ALECs. Consequently, to stay in business, most ALECs are forced to fax their orders to the ILECs. The Florida Public Service Commission has recently ruled that BellSouth (the local ILEC) must make available to ALECs its online edit checking capabilities, ruling as follows:

***BellSouth shall modify the ALEC ordering systems so that the systems provide the same online edit checking capability to Supra that BellSouth's retail ordering systems provide.***<sup>3</sup>

When ILECs fail to provide ALECs the same online edit checking capabilities available to themselves, the ILECs are simply building in delays and errors in the ALECs order capabilities. In this regard, Supra would like to see a National Standard or rule which requires ILECs to provide ALECs with the same online edit checking capabilities that ILEC provides itself. Dual systems of OSS (i.e. one for the ILEC and another for the ALEC) are inherently unequal. To paraphrase the Supreme Court's wisdom in abolishing racial integration in public schools, "***separate but equal, is inherently unequal.***" Undoubtedly any dual OSS systems created by the ILECs are inherently unequal and should be abolished. Accordingly, Supra would ask for a rule that gives the ALECs the option of requesting and using the exact same OSS that the ILEC provides itself.

16. Supra suggests the following measures to aid in enforcement of local loop requirements and local competition in general:

- The ILECs should be barred from filing for Section 271 relief for 6 months in their entire area for each legitimate anti-competitive complaint filed against them by a ALEC; and
- The commission should establish monetary penalties to be paid by ILECs which will sufficiently deter bad faith behavior on the part of ILECs.

17. It is rather unfortunate that the commission's OSS rules do not ensure that ALECs have necessary information about loops or other information necessary for ALECs to be able to perform at the same level as the ILECs. For example, the ILECs have a cable layout record which is called PLATS or FAAR. The database that warehouses loop records is the loop facility assignment control systems (LFACS). Direct access to these systems will greatly aid competition in the provision of advanced services to subscribers. LFACS determines the nearest terminal and the best cable pair assignment. If the subscriber is at a remote location, LFACS will make a remote terminal (TR) and carrier assignment. This is sometimes referred to as an F1/F2 assignment. A new system, PREMIS, was developed to map the street guide (SAG) to subscriber geography, and the telephone-company equipment for FN assignments. Attached as Table A is a detailed Provisioning Diagram of a typical ILEC. The diagram shows the various databases ILECS use in order to provide services. ILECs also have a detailed inventory of existing loops in the PLATS or FAAR. Supra believes that so long as ILECs are able to prevent ALECs from having access to detailed records about the local system, that competition in the local loop will be greatly stifled. Accordingly, Supra believes that ALECs must have access to the same electronic interfaces that are available to ILECs to obtain loop information. Moreover, ALECS must also have access to the same online edit check capability that the ILECs give themselves.

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<sup>3</sup> Florida Public Service Commission Docket No.980119-TP, Order No. PSC-98-1001-FOF-TP issued on July 22, 1998, page 36. Emphasis added.

### Loop Spectrum Management

18. To avoid “crosstalk”, Supra suggests proper testing of equipment before deployment. That process, coupled with beta testing and field trials should be able to aid in the effective elimination of crosstalk. We believe that the processes enumerated above would effectively deal with the problem of crosstalk. ALECs should be allowed to lease the loop for data services and resell the voice service of the ILEC if that is the service the ALEC wishes to offer their subscribers. Supra does not believe that this is will have any negative impact on the PSTN or the entire network.

### Uniform Standards For Attachment Of Electronic Equipment At The Central Office End Loop

19. Supra agrees that a simple set of national requirements for central office equipment would facilitate competition, reduce new entrants’ costs, speed time to market and reduce confusion. Supra believes that there should be certification for equipment that meets the national standards requirement. However, at this time Supra is unable to proffer our suggested approach to such certification as Supra is still working out the details.

### Redefining the Local Loop to Ensure Competitive LEC Access to Loops Capable of Providing Advanced Services

20. The rule that ILECs are required to make xDSL-compatible loops available to competitors is too narrow and therefore insufficient to ensure that ALECs have access to the loop functionalities they need to offer advanced services. Supra believes that the most appropriate loop definition to be “ILECs are required to make available clear and clean channel loops to ALECs”. This definition takes care of all material concerns and allows the ALEC to be free to provide whatever service the ALEC deems fit over such a loop. This definition will also avoid unnecessary charges to be imposed upon the ALEC by the ILEC.

### Unbundling Loops Passing Through Remote Terminals

21. Supra agrees with the commission’s conclusion that providing xDSL-compatible loop as an unbundled network element is presumed to be “technically feasible” if the ILEC is capable of providing xDSL-based services over that loop. However, we find this declaration too subjective. That statement is based on the ILEC’s willingness to perform xDSL-based services over a loop before it becomes technically feasible. What advanced services loop require is a clear and clean channel. Supra believes that the commission should adopt this definition. Supra also agrees that deployment intervals for provisioning xDSL-compatible loops should be the same for ILECs and ALECs, regardless of whether the loop passes through a remote concentration device. The only way the commission can enforce this order is through the provision of adequate OSS to ALECs.

### Sub-Loop Unbundling and Collocation at the Remote Terminal

22. It is technically feasible to require ILECs to unbundle sub-loop elements and provide ALECs access to the remote terminal so that ALECS can provide advanced services because that is exactly what ILECs will do for their affiliates. Supra agrees with the commission that ILECs must permit collocation of ALECs equipment at the remote terminal. This is absolutely critical to the success of the universal deployment of advanced services. Sub-loop unbundling and access to remote terminals are absolutely crucial to ALECs for the provision of advanced services since advanced services are telecommunications services. However, where the ILEC claims that unbundling sub-loop is technically infeasible, we agree with the commission that the ILEC should be obligated to provide an alternative unbundling method at no greater cost to the ALEC. The ILEC should be required to demonstrate within reasonable time that such unbundling method will provide the ALEC with a loop of the same quality and functionality as the loop that the ALEC would have obtained through access to the sub-loop element(s).

23. ALECs should be allowed to use sub-loops to perform any and all types of advanced services which they may choose to perform over that arrangement and all such sub-loops should be unbundled. Supra proposes that the limited space at remote terminals be allocated on a “first come, first served “ basis and review such allocation method after 6 months to determine the need for fine-tuning. Supra agrees with the commission’s conclusion that an ILEC may not take all the available space in a remote terminal, and then transfer ownership of that equipment in the remote terminal to an advanced services affiliate. If the ILEC realizes that it has no need for the asset anymore, competitive bids should be invited for such assets and disposal made to the highest bidder. The state commission responsible for the asset should supervise this exercise.

### Effects of Additional Requirements for Local Loops

24. Any or all of the commission’s tentative conclusions or proposals should be viewed as a minimum standard to be improved by the states PSCS and/or through negotiations and arbitration. ALECS should have the option of inserting such provisions into their present agreements with ILECs.

### **E. Unbundling Obligations Under Section 251(c)(3)**

25. Supra has noted the Commission’s concern over certain proprietary elements in an ILEC’s network. One note at this juncture is that if any piece of information is proprietary in nature, the ILEC should communicate that to the requesting carrier and request that a confidential arrangement be put into place before the exchange of such information. Notwithstanding the commission’s concern over confidentiality, Supra does not believe that there is anything confidential anymore about an ILEC’s network. Supra also agrees with NTIA’s proposal that the commission find section 251(c) to be fully implemented on a service-by-service basis. This is necessary to bring some stability to the industry and reduce the already excessive litigation.

### **F. Resale Obligations Under Section 251(c)(4)**

26. Supra agrees with the commission's tentative conclusion, that advanced services marketed by ILECs to residential or business users or to Internet Service Providers should be deemed subject to the section 251(c)(4) resale obligation, without regard to their classification as telephone exchange service or exchange access.

### **G. Limited InterLATA Relief**

27. Supra believes that the LATA boundaries should be left as they are now so as to avoid abuse of changes by the ILECs. Accordingly, the LATAs should remain unchanged.

28. Supra agrees with the commission's tentative conclusion that it would be reasonable to approve LATA boundary modifications that allow BOCs to provide advanced services to entire elementary or secondary school districts on an intraLATA basis, but only when the school districts straddle LATA boundaries. Supra believes that this is enough incentive for the ILECs and that there should not be any further relief at this time. Providing any further relief to the ILECs at this time is too risky and may jeopardize the entire *Local Competition Order*.

### **III. CONCLUSION**

29. Supra respectfully requests that this Commission consider the above referenced comments and incorporate such comments into the Commission's future rule-making.

Respectfully Submitted,

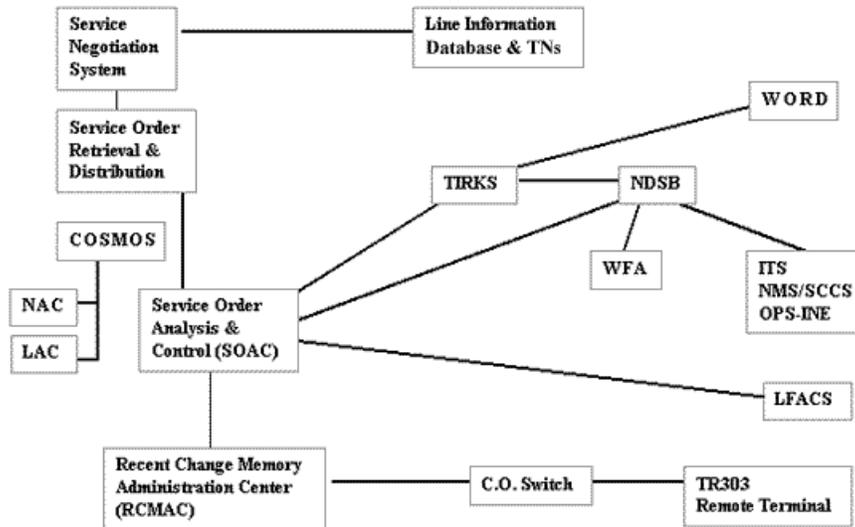
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## IV. APPENDIX

TABLE "A"



### Process:

1. End user calls an ILEC's customer service representative (CSR).
2. CSR verifies account-based data, billing name, address telephone number (TN) directory listings with the help of service-negotiation systems.
3. For special services, data services, and ISDN, the CSR verifies that the loop can support the requested service. The CSR also, with the service-order system, verifies that the switch and transmission equipment can support the requested service.
4. The CSR inputs a service order (SO) to the service order retrieval and distribution system (SORD) using universal service order codes (USOC).
5. SORD requests are sent to the service order analysis and control system (SOAC). SORD also accepts completed orders from SOAC for distribution to other locations. SORD can be queried at any time by telephone company personnel wishing to know the status of service orders (this is an opportunity area to develop secured access for customers query).
6. SOAC accepts a service order from SORD and generates assignment requests sequentially. First, SOAC generates loop assignment requests for the loop facility assignment-control systems (LFACS).
7. LFACS determines the nearest terminal and the best cable-pair assignment. If the subscriber is at a remote location, LFACS will make a remote terminal (RT) and carrier assignment. This was sometimes referred to as an F1/F2 assignment. A new systems, PREMIS, was developed to map the street address guide (SAG) to subscriber geography, and the telephone-company equipment for FN assignments.
8. The assignment of non-switched and non-locally-switched special services follows a preferential assignment rule for routing. SOAC sends the cable-pair information to the trunk inventory records keeping systems (TIRKS). TIRKS performs the necessary circuit design and forwards end-to-end circuit data and plug-in-card (PIC) information to the network and services database (NSDB) and also a paper copy to the work order and records details (WORD) document. The WORD document-based service orders are the basis for getting the special services circuits into service. These records are retained for future maintenance. The NSDB data base is used for maintenance and testing from the integrated test system (ITS), and also for work and force administration (WFA) purposes.
9. SOAC obtains loop assignment data from LFACS and passes the information through a work manager to the computer system for mainframe operations (COSMOS). COSMOS generates the central office assignment data based on termination capacity and load balancing. The request from SOAC to COSMOS is in the form of telephone number, class of service, and cable-pair assignment. The response from COSMOS to SOAC includes the office equipment (OE) number, type-pair frame wiring information, etc.
10. SOAC forwards information obtained from COSMOS to the recent change information center (RCMAC). A recent change operations systems such as remote memory administration system (RMAS) or MARCH stores the orders as

they arrive and forwards them to the central office. A translation module ensures that input to the central office is compatible with the switch, e.g., ESS#5, DMS100, switch recent-change views. This activity updates switch translations (recent developments such as the operations manager for switched service provisioning [OM-SP] are evolution of RCMAC functionality).

11. SOAC sends a copy of the completed service order to the network services database (NSDB) to create a permanent record for maintenance purposes.
12. NSDB passes the service order to an installation work center for completion of any required outside-plant wiring connections.
13. When all service order assignments are complete, then the customer records information system (CRIS) is updated.

**Provisioning Issues:**

- Introduction of services such as ISDN created a major problem in work-order flow due to lack of support in the systems.
- COSMOS could not provide ISDN and other broadband support
- External processors were developed to support services:
  - LAS - ISDN line assignment system
  - SWITCH - an attempt to replace COSMOS
  - OM-SP - an ATT system covering ISDN provisioning supported by ILAS, COSMOS & MARCH
  - BRCS, LASS - business & residential-services systems, local area signaling services are adjunct processor-based services to create initial orders.
  - AIN created a separation of the switch connection control from the call-control functions.
  - Administration and support services for AIN services can not be provided by traditional OSS.
  - This created a need for a service management system (SMS) to provide provisioning, memory administration, and synchronization across multiple databases, surveillance, and network management.