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**FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY**

ND

F. Caton
Secretary
Communications Commission
The Secretary
Street, SW
Washington, DC 20054

Re: **Ex Parte - Consolidated Application of EchoStar Communications Corporation, Hughes Electronics Corporation, and General Motors Corporation for Authority to Transfer of Control (CS Docket No. 01-348)**

Hughes Electronics Corporation ("Hughes") and General Motors Corporation hereby submit documents in response to the Commission's February 4, 2002 Initial Demand and Document Request (the "Request"). The documents are being provided in response to the Request, as clarified in our February 21, 2002 procedural meeting, in the manner set forth in our letter dated February 28, 2002 and in the joint letter from EchoStar Communications Corporation ("EchoStar"), Hughes and GM dated March 5, 2002. The material responsive to the Request is being provided by person and organized by responsive member. We are continuing to review the collected documents from the sources identified in the Commission and will produce responsive documents on a rolling basis as soon as possible.

This production includes some documents that are public and some that are confidential. Two copies of the public documents are provided herewith. One copy of the confidential documents is being submitted with the version of this cover letter marked "Confidential Filing: Not for Public Inspection" and is being filed under seal with the FCC Office and should not be placed in the public record in this proceeding. Two copies of the confidential and confidential documents are also being delivered to Marcia Glauberman and the Commission. The confidential documents submitted by GM and Hughes are marked

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Exhibit A
Hughes Electronics Corporation Response to FCC Initial Request for Information dated February 4, 2002
Log of Confidential Documents Provided to FCC on April 5, 2002

Production Number	Document Source	Business Unit Source	Description	Request No.
FCC2A 000000845 - FCC2A	BOWEN, H	HNS	ARTICLE ON SATELLITE COMPETITION	XIII.D
FCC2A 000000850 - FCC2A	BOWEN, H	HNS	TWO WAY SATELLITE DELIVERED INTERNET	XIII.D
FCC2A 000000853 - FCC2A	BOWEN, H	HNS	DBS PLAYS HARBALL./CAN SATELLITE GO HEAD-TO-HEAD WITH CABLE?	XIII.D
000000855			[UNTTLED]	XIII.D
FCC2A 000000856 - FCC2A	BOWEN, H	HNS	BULLSH ON BROADBAND--AN INVESTOR'S GUIDE TO COMPETITIVE SERVICE PROVIDERS	XIII.D
FCC2A 000000858 - FCC2A	BOWEN, H	HNS	MUSIC AND MESSAGING SERVICES--FOR YOUR BUSINESS FROM DIRECTWAY	XV.A
000000913			PRACTICAL APPLIATIONS OF MUSIC IN SERVICE SETTINGS	XV.A
FCC2A 000000914 - FCC2A	BOWEN, H	HNS	PROOF YOU CAN-GET FASTER TURNOVER--AND--HAPPIER CUSTOMERS--BACKGROUND MUSIC AS IT AFFECTS RESTAURANT PATRONS	XV.A
000000918			IT MAKES SENSE TO-SELECT THE PROPER MUSIC	XV.A
FCC2A 000000919 - FCC2A	BOWEN, H	HNS	BUSINESS SOLUTIONS	XV.A
FCC2A 000000935 - FCC2A	BOWEN, H	HNS	WHY ENTERPRISES CHOOSE CISCO	XV.A
000000937			NETWORK CACHING TECHNOLOGIES	XV.A
FCC2A 000000938 - FCC2A	BOWEN, H	HNS	MEDIA METRIX RELEASES U.S. TOP SO WEB AND DIGITAL MEDIA PROPERTIES--FOR APRIL 2000	XV.A
FCC2A 000000943 - FCC2A	BOWEN, H	HNS	VALUE PROPOSITION	XV.A
FCC2A 000000944 - FCC2A	BOWEN, H	HNS	2000 U.S. MEDIUM BUSINESS NETWORKING (LAN AND WAN)	XV.A
FCC2A 000000945 - FCC2A	BOWEN, H	HNS	TABLE OF CONTENTS	XV.A
FCC2A 000000946 - FCC2A	BOWEN, H	HNS	U.S. INTERNET CONTENT DELIVERY MARKETS	XV.A
000000949			PLANNING AND BUILDING--A DATA CENTER--MEETING THE E-BUSINESS CHALLENGE	XV.A
FCC2A 000000950 - FCC2A	BOWEN, H	HNS	HOME-IS WHERE THE NETWORK IS	XV.A
FCC2A 000000951 - FCC2A	BOWEN, H	HNS	FREE HOME NETWORKING DICTIONARY	XV.A
FCC2A 000000953 - FCC2A	BOWEN, H	HNS	SLAVES TO THE NETWORK	XV.A
FCC2A 000000973 - FCC2A	BOWEN, H	HNS	BROADBAND PROVIDERS TOULIERE	XV.A
FCC2A 000000977 - FCC2A	BOWEN, H	HNS	LEARN MORE ABOUT THE NETWORK	XV.A
000000992				
FCC2A 000000993 - FCC2A	BOWEN, H	HNS		
FCC2A 000001002 - FCC2A	BOWEN, H	HNS		
000001002				

CONFIDENTIAL

Production Number	Document Source	Business Unit Source	Description	Request No.
FCC2A 000001036 - FCC2A	BOWEN, H	HNS	BRINGING BROADBAND TO RETAIL	XV.A
FCC2A 000001038 - FCC2A	BOWEN, H	HNS	DBS GAINS ON CABLE	XV.A
FCC2A 000001041 - FCC2A	BOWEN, H	HNS	MIPS/TECHNOLOGIES/ MIPS TECHNOLOGIES AND HUGHES NETWORK SYSTEMS TEAM TO DELIVER NEXT-GENERATION DIRECTV SET-TOP BOX SYSTEMS; HUGHES STANDARIZE ABOUT US INDUSTRY	XV.A
FCC2A 000001043 - FCC2A	BOWEN, H	HNS	THE MULTICHANNEL CONTENT DELIVERY OPPORTUNITY	XV.A
FCC2A 000001046 - FCC2A	BOWEN, H	HNS	[UNTITLED]	XV.A
FCC2A 000001051 - FCC2A	BOWEN, H	HNS	RESEARCH STUDIES	XV.A
FCC2A 000001052 - FCC2A	BOWEN, H	HNS	CONSUMER BROADBAND SATELLITE SERVICES-A GLOBAL ANALYSIS OF KEY PLAYERS AND MARKET OPPORTUNITIES	XV.A
FCC2A 000001054 - FCC2A	BOWEN, H	HNS	BROADBAND SATELLITE MARKETS-A COMPREHENSIVE ANALYSIS OF TRENDS AND OPPORTUNITIES	XV.A
000001055	BOWEN, H	HNS	ATTRACTING CONSUMERS TO BROADBAND SERVICES IN THE ABSENCE OF KILLER APPLICATIONS	XV.A
FCC2A 000001056 - FCC2A	BOWEN, H	HNS	SHARPENING THE EDGE-IMPROVING PERFORMANCE BEYOND THE SERVER	XV.A
000001059	BOWEN, H	HNS	BULLETIN-IDCS 2000 U.S. WEB SPENDING MODEL--FORECAST AND ANALYSIS BY VERTICAL INDUSTRY	XV.A
FCC2A 000001060 - FCC2A	BOWEN, H	HNS	SHAW'S RAISES STAKE IN SELF-CHECKOUT SYSTEMS	XV.A
000001063	BOWEN, H	HNS	FOUND, INC. AND MERCHANTWIRE ANNOUNCE STRATEGIC PARTNERSHIP--AGREEMENT ALLOWS RETAILERS TO MOST EFFECTIVELY INTEGRATE THEIR MULTI-CHANNEL ASSETS	XV.A
FCC2A 000001066	BOWEN, H	HNS	FINISH LINE SELECTS MERCHANTWIRE AS INFRASTRUCTURE PLATFORM AND LONG-TERM, SCALABLE TECHNOLOGY SOLUTION	XV.A
000001079	BOWEN, H	HNS	SURVEY - REAL ESTATE AND THE NEW ECONOMY: DEATH OF SHOPPING MALL EXAGGERATED; RETAIL BY DAVID LAWSON; IT-HAS BEEN PREDICTED THAT INTERNET SHOPPING WILL HIT RETAIL PROPERTIES, BUT THEY MAY BE DEVELOPING A HEALTHY-RELATIONSHIP	XV.A
FCC2A 000001083 - FCC2A	BOWEN, H	HNS		
000001084	BOWEN, H	HNS		
FCC2A 000001085 - FCC2A	BOWEN, H	HNS		
000001086	BOWEN, H	HNS		
FCC2A 000001087 - FCC2A	HOVERSTEN, E	HNS	GMS HUGHES ELECTRONICS TO MERGE WITH ECHOSTAR COMMUNICATIONS	XIV.D
000001091	HOVERSTEN, E	HNS		
FCC2A 000001092 - FCC2A	HOVERSTEN, E	HNS		
000001096	HOVERSTEN, E	HNS		

Production Number	Document Source	Business Unit Source	Description	Request No.
FCC2B 000001365 - FCC2B	BOWEN, H	HNS	U.S. INTERNET CONTENT DELIVERY MARKETS	XV/A
FCC2B 000001367 - FCC2B	BOWEN, H	HNS	THE CONSUMER MARKET OPPORTUNITY	XV/A
FCC2B 000001369 - FCC2B	BOWEN, H	HNS	SATELLITE COMMUNICATIONS-INDUSTRY UPDATE-THE TOP THREE -	XV/A
000001374			LEHMAN BROTHERS' SATELLITE DAILY	
FCC2B 000001375 - FCC2B	BOWEN, H	HNS	WORLDWIDE COMMERCIAL SATELLITE REVENUE	XV/A
FCC2B 000001377 - FCC2B	BOWEN, H	HNS	RESEARCH STUDIES	XV/A
FCC2B 000001384 - FCC2B	BOWEN, H	HNS	HUGHES BROADBAND ALLIANCE PROGRAM-BROCHURE COPY. DRAFT	XV/A
000001395			NUMBER 1.0 - 10-10-01	
FCC2B 000001396 - FCC2B	BOWEN, H	HNS	HUGHES TM-BROADBAND-ALLIANCE PROGRAM	XV/A
FCC2B 000001402 - FCC2B	BOWEN, H	HNS	SATELLITE STREAM-BROADBAND FROM ABOVE-AN UPDATE ON	XV/A
000001416			BROADBAND LOCAL ACCESS THROUGH SATELLITES-BRIEF	
FCC2B 000001417 - FCC2B	BOWEN, H	HNS	INTERNET INFRASTRUCTURE AND SERVICES-BUSTING THE INTERNETS	XV/A
000001553			BOTTLENECKS-A HOLISTIC APPROACH	
FCC2B 000001554 - FCC2B	BOWEN, H	HNS	CONTENT DELIVERY AND DISTRIBUTION MARKET	XV/A
FCC2B 000001566 - FCC2B	BOWEN, H	HNS	STORE ACCESS NETWORKS-TECHNOLOGY OVERVIEW-DSL/56K	XV/A
000001568			FRAME/FRACTIONAL T1	
FCC2B 000001569 - FCC2B	BOWEN, H	HNS	BEYOND THE INTERNET-THE EMERGENCE OF BROADBAND AND IP	XV/A
000001629			DATA SERVICES AS-THE PRIME MOVER OF A TECHNOLOGY-DRIVEN	
FCC2B 000001630 - FCC2B	BOWEN, H	HNS	ECONOMY	XV/A
FCC2B 000001634 - FCC2B	BOWEN, H	HNS	PUBLIC RELATIONS PLAN-FOR DIRECTWAY TM SERVICES	XV/A
000001641			WEAK SUB GROWTH AND REDUCED GUIDANCE-COME AS NO SURPRISE.	
FCC2B 000001642 - FCC2B	BOWEN, H	HNS	FORTUNATELY, AMPLE VALUE EXISTS IN GMH	XV/A
FCC2B 000001650 - FCC2B	BOWEN, H	HNS	[UNTITLED]	
FCC2B 000001651 - FCC2B	BOWEN, H	HNS	DIRECTWAY SERVICES - E MAIL	XV/A
FCC2B 000001652 - FCC2B	BOWEN, H	HNS	MARKET DEMAND DEFINITION	XV/A
000001658			THE VSAT REPORT-1999-VSAT INDUSTRY STATUS-REPORT TO	XV/A
FCC2B 000001659 - FCC2B	BOWEN, H	HNS	CLIENTS-VERSION 1.2-EXECUTIVE SUMMARY-HUGHES NETWORK	XV/A
000001661			SYSTEMS	
FCC2B 000001662 - FCC2B	BOWEN, H	HNS	COMSYS RELEASES UPDATE ON-VSAT SATELLITE MARKET	XV/A
FCC2B 000001671 - FCC2B	BOWEN, H	HNS	TRENDS-1999 INDUSTRY SALES INCREASE BY 30 PERCENT.-DRIVEN	
000001673			BY EXPANSION OF INTERNET-BASED SERVICES	
			GROCERY STORES/SUPERMARKETS- IN THE UNIFIED STATES	
			BY EXPANSION OF INTERNET-BASED SERVICES	
			SALE DELICIOUS CHECK CONVEYERS	
			PRODUCTIVITY IN THE BROADBAND MARKET	

Production Number	Document Source	Business Unit Source	Description	Request No.
FCC2C 000002751 - FCC2C 000002776	BOWEN, H	HNS	DRAFT-BACCHUS-NETWORK OPTIMIZATION AND-CONTENT DELIVERY SERVICES	XV/A
FCC2C 000002777 - FCC2C 000002785 - FCC2C 000002808 - FCC2C 000002836 - FCC2C 000002870	BOWEN, H BOWEN, H BOWEN, H BOWEN, H	HNS HNS HNS HNS	BACCHUS BACCHUS-BUSINESS PLAN BACCHUS-BUSINESS PLAN-PROPRIETARY AND CONFIDENTIAL BACCHUS-BUSINESS PLAN-PROPRIETARY AND CONFIDENTIAL-DRAFT	XV/A XV/A XV/A XV/A
FCC2C 000002871 - FCC2C 000002913	BOWEN, H	HNS	BACCHUS-BUSINESS PLAN-PROPRIETARY AND CONFIDENTIAL-DRAFT	XV/A
FCC2C 000002914 - FCC2C 000002964	BOWEN, H	HNS	BACCHUS-BUSINESS PLAN-PROPRIETARY AND CONFIDENTIAL DRAFT	XV/A
FCC2C 000002965 - FCC2C 000003013	BOWEN, H	HNS	BACCHUS-BUSINESS PLAN-PROPRIETARY AND CONFIDENTIAL-DRAFT	XV/A
FCC2C 000003014 - FCC2C 000003025 - FCC2C 000003031 - FCC2C 000003056 - FCC2C 000003065 - FCC2C 000003082 - FCC2C 000003094	BOWEN, H BOWEN, H BOWEN, H BOWEN, H BOWEN, H BOWEN, H	HNS HNS HNS HNS HNS HNS	DRIVERS FOR HOME NETWORKING DRIVERS HUGHES NETWORK SYSTEMS-UCENTRIC SYSTEMS DRIVERS DRIVERS HOME NETWORKING-BROADBAND SHARING AND-PREMIUM SERVICES	XV/A XV/A XV/A XV/A XV/A XV/A
FCC2C 000003095 - FCC2C 000003134 - FCC2C 000003145 - FCC2C 000003148 - FCC2C 000003151 - FCC2C 000003152 - FCC2C 000003172	BOWEN, H BOWEN, H BOWEN, H BOWEN, H BOWEN, H BOWEN, H	HNS HNS HNS HNS HNS HNS	CONSUMER RESEARCH HOME NETWORKING: ARE CONSUMERS CONNECTING? HOME NETWORKING RETAILER SURVEY-QUESTIONAIRE MARKET PENTRATION UCENTRIC PRICING BUILDING THE DIGITAL HOME OFFICE-IDENTIFYING STRATEGIC OPPORTUNITIES CONSUMER MARKET CONVERGENCE-SHOPPING FOR A HOME NETWORK OPPORTUNITIES IN THE HOME-NETWORKING MARKET-UCENTRIC-DISCUSSION DOCUMENT QUESTIONS-PRIMARY OBJECTIVES: EXPAND EXISTING TRANSPORT BUSINESS IDENTIFY NEW	XV/A XV/A XV/A XV/A XV/A XV/A XV/A
FCC2C 000003173 - FCC2C 000003184	BOWEN, H	HNS	HOME NETWORKING	XV/A
FCC2C 000003185 - FCC2C 000003186	BOWEN, H	HNS	IDENTIFY NEW	XV/A
FCC2C 000003197 - FCC2C 000003202	BOWEN, H BOWEN, H	HNS HNS	IDENTIFY NEW IDENTIFY NEW	XV/A XV/A
FCC2C 000003198 - FCC2C 000003202	BOWEN, H BOWEN, H	HNS HNS	IDENTIFY NEW IDENTIFY NEW	XV/A XV/A

Production Number	Document Source	Business Unit Source	Description	Request No.
FCC2C 000003209 - FCC2C	BOWEN, H	HNS	MEETING MINUTES-INTERVIEW WITH PETER ARBITANTO	XV/A
FCC2C 000003211 - FCC2C	BOWEN, H	HNS	[UNTTLED]	XV/A
FCC2C 000003212 - FCC2C	BOWEN, H	HNS	TRADITIONAL VS HUGHES-VALUE CHAIN	XV/A
FCC2C 000003213 - FCC2C	BOWEN, H	HNS	BACCHUS VALUE PROPOSITION: VIDEO COMMUNICATION	XV/A
FCC2C 000003216 - FCC2C	BOWEN, H	HNS	QUESTIONS FOR MEDIA AND ENTERTAINMENT STRATEGIES	XV/A
FCC2C 000003218 - FCC2C	BOWEN, H	HNS	STRATEGIC MARKETING-MISSION: CREATE SUBSTANTIAL REVENUE OPPORTUNITIES THROUGH NEW AND INNOVATIVE BUSINESS INITIATIVES.	XV/A
000003227			[UNTTLED]	
FCC2C 000003228 - FCC2C	BOWEN, H	HNS	LANDSCAPE AND OPPORTUNITIES-HUGHES CORPORATE STRATEGY	XV/A
FCC2C 000003230 - FCC2C	BOWEN, H	HNS	GROUP-NOVEMBER 2000	XV/A
000003263			HNS STRATEGY SESSION 2-WORKPLAN-APRIL 2000	
FCC2C 000003264 - FCC2C	BOWEN, H	HNS	DIRECTWAY ENTERPRISE SERVICE-BUSINESS STRATEGY	XV/A
FCC2C 000003278 - FCC2C	BOWEN, H	HNS	VERTICAL MARKETS: TRENDS	XV/A
FCC2C 000003299 - FCC2C	BOWEN, H	HNS	[UNTTLED]	
FCC2C 000003304 - FCC2C	BOWEN, H	HNS	STATUS OF LINUX AND MAC TWO-WAY PORTS	XV/A
FCC2C 000003308 - FCC2C	BOWEN, H	HNS	DIRECPOINT INDUSTRY ANALYSIS-RESTAURANTS-FAST FOOD / FAMILY-CASUAL DINING-TRENDS-KEY STATISTICS	XV/A
FCC2C 000003310 - FCC2C	BOWEN, H	HNS	PM SYNOPSIS	XV/A
000003318			[UNTTLED]	
FCC2C 000003319 - FCC2C	BOWEN, H	HNS	PROJECT ADDRESS-INDUSTRY CONTACTS AND SCHEDULE	XV/A
FCC2C 000003320 - FCC2C	BOWEN, H	HNS	[UNTTLED]	
FCC2C 000003330 - FCC2C	BOWEN, H	HNS	[UNTTLED]	
FCC2C 000003331 - FCC2C	BOWEN, H	HNS	[UNTTLED]	
FCC2C 000003333 - FCC2C	BOWEN, H	HNS	[UNTTLED]	
FCC2C 000003339 - FCC2C	BOWEN, H	HNS	[UNTTLED]	
FCC2C 000003343 - FCC2C	BOWEN, H	HNS	[UNTTLED]	
FCC2C 000003345 - FCC2C	BOWEN, H	HNS	TEAM MEMBERS	XV/A
FCC2C 000003374 - FCC2C	BOWEN, H	HNS	SUCCESSFUL RESTAURANT ASP CASE STUDY	XV/A
FCC2C 000003375 - FCC2C	BOWEN, H	HNS	STRATEGIC MARKETING: RESTAURANT EVALUATION	XV/A
FCC2C 000003400 - FCC2C	BOWEN, H	HNS	STRATEGIC MARKETING: RESTAURANT EVALUATION	XV/A
FCC2C 000003413 - FCC2C	BOWEN, H	HNS	STRATEGIC MARKETING: RESTAURANT EVALUATION	XV/A
FCC2C 000003438 - FCC2C	BOWEN, H	HNS	STRATEGIC MARKETING: RESTAURANT EVALUATION	XV/A
FCC2C 000003463 - FCC2C	BOWEN, H	HNS	RESTAURANT STRATEGY PHASE TWO	XV/A
FCC2C 000003469 - FCC2C	BOWEN, H	HNS		
FCC2C 000003471				
FCC2C 000003472				
FCC2C 000003473				
FCC2C 000003474				
FCC2C 000003475				
FCC2C 000003476				
FCC2C 000003477				
FCC2C 000003478				
FCC2C 000003479				
FCC2C 000003480				
FCC2C 000003481				
FCC2C 000003482				
FCC2C 000003483				
FCC2C 000003484				
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FCC2C 000003496				
FCC2C 000003497				
FCC2C 000003498				
FCC2C 000003499				
FCC2C 000003500				

Production Number	Document Source	Business Unit Source	Description	Request No.
FCC2C 000003601 - FCC2C	BOWEN, H	HNS	MAIL ISSUES	XV.A
FCC2C 000003608 - FCC2C	BOWEN, H	HNS	[UNTTLED]	XV.A
FCC2C 000003611 - FCC2C	BOWEN, H	HNS	MALLS DEMOGRAPHICS	XV.A
FCC2C 000003618 - FCC2C	BOWEN, H	HNS	EXECUTIVE SUMMARY	XV.A
FCC2C 000003633 - FCC2C	BOWEN, H	HNS	[UNTTLED]	XV.A
FCC2C 000003635 - FCC2C	BOWEN, H	HNS	HNS/AEI MUSIC SERVICES-BUSINESS PLAN	XV.A
FCC2C 000003640 - FCC2C	BOWEN, H	HNS	[UNTTLED]	XV.A
FCC2C 000003641 - FCC2C	BOWEN, H	HNS	DIRECTWAY MUSIC	XV.A
FCC2C 000003644 - FCC2C	BOWEN, H	HNS	DIRECTWAY MUSIC	XV.A
FCC2C 000003657 - FCC2C	BOWEN, H	HNS	DIRECTWAY MUSIC BUSINESS PLAN	XV.A
FCC2C 000003661 - FCC2C	BOWEN, H	HNS	AEI HNS CONFERENCE CALL 10/17-NEW STATUS AS OF 10/31	XV.A
FCC2C 000003662 - FCC2C	BOWEN, H	HNS	[UNTTLED]	XV.A
FCC2C 000003665 - FCC2C	BOWEN, H	HNS	MUSIC	XV.A
FCC2C 000003708 - FCC2C	BOWEN, H	HNS	DIRECTWAY MUSIC BUSINESS PLAN	XV.A
FCC2C 000003711 - FCC2C	BOWEN, H	HNS	MARKETING CEATIVE BRIEF FOR NEW JOBS	XV.A
FCC2C 000003718 - FCC2C	BOWEN, H	HNS	DIRECTWAY CERTIFICATION-OVERVIEW AND CONCEPT	XV.A
FCC2C 000003719 - FCC2C	BOWEN, H	HNS	NEW SERVICE INITIATIVES MATRIX	XV.A
FCC2C 000003732 - FCC2C	BOWEN, H	HNS	LAUNCHING DIRECTWAY SERVICES-OCTOBER 18, 2000	XV.A
FCC2C 000003777 - FCC2C	BOWEN, H	HNS	ENTERPRISE DIVISION-STRATEGIC MARKETING-MAY 31, 2000	XV.A
FCC2C 000003822 - FCC2C	BOWEN, H	HNS	ENTERPRISE DIVISION-STRATEGIC MARKETING-MAY 31, 2000	XV.A
FCC2C 000003840 - FCC2C	BOWEN, H	HNS	OPEN/CABLE STR-MARKET OPPORTUNITY-AND-BUSINESS CASE	XV.A
FCC2C 000003860 - FCC2C	BOWEN, H	HNS	SET-TOP BOX STRATEGIC PLAN	XV.A
FCC2C 000003920 - FCC2C	BOWEN, H	HNS	NIelsen/NET RATINGS-INTERNET AUDIENCE MEASUREMENT	XV.A
FCC2C 000004101 - FCC2C	BOWEN, H	HNS	PROJECT ADDRESS -TABLE OF CONTENTS	XV.A
FCC2C 000004128 - FCC2C	BOWEN, H	HNS	PROJECT ADDRESS -SNAPSHOT TABLE OF CONTENTS	XV.A
FCC2C 000004135 - FCC2C	BOWEN, H	HNS	APPENDICES	XV.A
FCC2C 000004137 - FCC2C	BOWEN, H	HNS	WHAT IS THE DEMAND	XV.A
FCC2C 000004160 - FCC2C	BOWEN, H	HNS	PROJECT ADDRESS-TABLE OF CONTENTS	XV.A
FCC2C 000004161 - FCC2C	BOWEN, H	HNS	VSP BUSINESS MODEL PROFITABILITY SUCCESS MATRIX	XV.A
000004205	BOWEN, H	HNS	WHAT ARE THE ASP MARKET EXPECTATIONS-STRONG PROSPECTS FOR ASP MODEL	XV.A
FCC2C 000004204 - FCC2C	BOWEN, H	HNS	PROJECT ADDRESS THE RESTAURANT INVERSE	XV.A
FCC2C 000004206 - FCC2C	BOWEN, H	HNS	PROJECT ADDRESS THE COMPANY OVERSEAS	XV.A
FCC2C 000004207 - FCC2C	BOWEN, H	HNS	PROJECT ADDRESS THE COMPANY OVERSEAS	XV.A
FCC2C 000004208 - FCC2C	BOWEN, H	HNS	PROJECT ADDRESS THE COMPANY OVERSEAS	XV.A
FCC2C 000004209 - FCC2C	BOWEN, H	HNS	PROJECT ADDRESS THE COMPANY OVERSEAS	XV.A
FCC2C 000004210 - FCC2C	BOWEN, H	HNS	PROJECT ADDRESS THE COMPANY OVERSEAS	XV.A
FCC2C 000004211 - FCC2C	BOWEN, H	HNS	PROJECT ADDRESS THE COMPANY OVERSEAS	XV.A
FCC2C 000004212 - FCC2C	BOWEN, H	HNS	PROJECT ADDRESS THE COMPANY OVERSEAS	XV.A
FCC2C 000004213 - FCC2C	BOWEN, H	HNS	PROJECT ADDRESS THE COMPANY OVERSEAS	XV.A
FCC2C 000004214 - FCC2C	BOWEN, H	HNS	PROJECT ADDRESS THE COMPANY OVERSEAS	XV.A
FCC2C 000004215 - FCC2C	BOWEN, H	HNS	PROJECT ADDRESS THE COMPANY OVERSEAS	XV.A
FCC2C 000004216 - FCC2C	BOWEN, H	HNS	PROJECT ADDRESS THE COMPANY OVERSEAS	XV.A
FCC2C 000004217 - FCC2C	BOWEN, H	HNS	PROJECT ADDRESS THE COMPANY OVERSEAS	XV.A
FCC2C 000004218 - FCC2C	BOWEN, H	HNS	PROJECT ADDRESS THE COMPANY OVERSEAS	XV.A
FCC2C 000004219 - FCC2C	BOWEN, H	HNS	PROJECT ADDRESS THE COMPANY OVERSEAS	XV.A
FCC2C 000004220 - FCC2C	BOWEN, H	HNS	PROJECT ADDRESS THE COMPANY OVERSEAS	XV.A
FCC2C 000004221 - FCC2C	BOWEN, H	HNS	PROJECT ADDRESS THE COMPANY OVERSEAS	XV.A
FCC2C 000004222 - FCC2C	BOWEN, H	HNS	PROJECT ADDRESS THE COMPANY OVERSEAS	XV.A
FCC2C 000004223 - FCC2C	BOWEN, H	HNS	PROJECT ADDRESS THE COMPANY OVERSEAS	XV.A
FCC2C 000004224 - FCC2C	BOWEN, H	HNS	PROJECT ADDRESS THE COMPANY OVERSEAS	XV.A
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FCC2C 000005586 - FCC2C	BOWEN, H	HNS	STATUS OF ROCKETSHIP	XV/A
FCC2C 000005590 - FCC2C	BOWEN, H	HNS	ENTERPRISE DIVISION-DIRECWAY TM SERVICE	XV/A
000005601			APPLICATIONS-SECOURIER	XV/A
FCC2C 000005602 - FCC2C	BOWEN, H	HNS	ENTERPRISE DIVISION-DIRECWAY TM SERVICE	XV/A
000005613			APPLICATIONS-SECOURIER	
FCC2C 000005614 - FCC2C	BOWEN, H	HNS	APPLICATIONS-SECOURIER	
FCC2C 000005615 - FCC2C	BOWEN, H	HNS	ENTERPRISE DIVISION-DIRECWAY TM SERVICE	
FCC2C 000005616 - FCC2C	BOWEN, H	HNS	APPLICATIONS-SECOURIER	
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Patrick Donovan <pdonovan@ucentric.com> on 06/11/2001 10:28:00 AM

Patrick Donovan/HNS@HNS, Holly Bowen/HNS@HNS, Rahul Savor/HNS@HNS
"Diana Hwang (E-mail)" <dhwang@ucentric.com>
Re: Announcement on satellite competition

Sorry for the multiple emails, but I came across another interesting article about this excerpt regarding the ComboBox by Bell Canada

It has already been grasped by Bell Canada Enterprises (BCE), owner of Canada's Bell ExpressVu DBS service and Bell Sympatico's high speed DSL form. BCE recently announced that it was integrating the two in a single top "ComboBox." It's being built by EchoStar Communications, which is Bell ExpressVu's prime receiver supplier.

Integrating its satellite and landline networks, BCE will enjoy the very advantages outlined above, says Tom Hope, the CEO at BCE subsidiary Bell Canada. But that's not all: thanks to the ComboBox's planned 40 Gb hard drive--one already found in the EchoStar PRO 501 set-top box--this carrier has also figured out "how to provide Video on Demand," he says.

Everybody has been thinking about network storage and then immediate delivery through a transport network," Hope explains. "Well, the ComboBox allows you to stream the top six movies [directly to the box via satellite], and they sit on [the set-top's hard drive] encrypted and secure. Then, if the user is to watch them, they play immediately and with full VCR functionality."

It's a combined Fusion-Ucentric set top could do the same thing)

Internet Business: The Good, The Bad And The Fuss Over Fiber

Business Information: Friday, June 8, 2001

10:00 (VIA Satellite/Phillips Publishing via COMTEX) -- When it comes to satellites and the Internet, the news is both bad and good. It's bad for those offering interconnecting terrestrial Internet backbones, or other Internet point applications. But it's good for those carriers offering Internet multipoint satellite Internet delivery.

But in another way, "satellite is not good for point-to-point, unless it's the only option available," says Stephen Blum, president of Tellus Venture Associates. However, "For point-to-multipoint it's a killer. You can't beat satellite."

How can two such contradictory views apply to the same telecom sector? Easy. Internet multipoint services exploit satellite technology's unique edge: they can reach entire hemispheres from a single point in space, and use that position to serve billions.

However, point-to-point satellite links merely mimic the capabilities of terrestrial fiber optic networks. Given the explosive growth of those networks--especially transoceanic--satellite point-to-point Internet links are finding themselves increasingly under siege.

Internet Multipoint: Looks Like Good News

When we speak of point-to-multipoint satellite Internet service, we're really talking about those carriers who link customers directly to the Web. We're talking about satellite ISPs operated by companies such as Hughes Network Systems (HNS) and Gilat.

At the least, both these companies have been busy staking claims to space.

For example, in January 2001, Hughes announced its "DirecTV Broadband Powered by DirecPC" consumer product. Aimed at the company's existing nine million DBS subscribers, "Powered by DirecPC" provides two-way high-speed Internet access via satellite, with a downstream speed of 400 kbps and a return path of 128 kbps. To sweeten the deal, Hughes is also packaging over 225 DirecTV channels, treating it all through a single "DirecDuo" dish at each receive site.

"It is a key element in the Hughes strategy to bring 'infotainment' directly to your home," says Paul Gaske, HNS' executive vice president and general manager. When the new service was announced in Las Vegas. "With the addition of DirecPC to our other 'Powered by' partners [such as America Online, Comcast, and Juno], DirecPC will now be marketed to a combined base of over 10 million existing subscribers of television and Internet services in the United States."

Meanwhile, Gilat's Starband Communications passed the 25,000 subscriber mark earlier this year. Given the service was launched a few short months ago, this is quite an accomplishment, and one that Starband CEO and co-chairman exults about.

"Just over a year, Starband has gone from a business plan to over 25,000 subscribers, national distribution channels, and an infrastructure to support demand from consumers still waiting for high-speed Internet access," he says. "We will continue to execute against a key company objective: to bring high-speed Internet access to virtually everyone, everywhere, in the United States."

Is this effort justified? If satellite ISPs perform as well as DBS has to date, probably yes.

According to Blum, U.S. DBS penetration will hit 18 million subs this year and 25 million by 2010. That's one out of every three households. Adding TV from space, on a platform that--as Hughes has correctly deduced--can carry high-speed Internet as well.

Does it matter better--and how often can one say that these days?--is that DBS subscribers not only earn more money than the general population--a median wage of \$48,200 versus \$38,885--but are also the kind of consumers about which advertisers fantasize, according to Michael Goodman, a senior analyst at the Yankee Group.

DBS subscribers are even more attractive, Goodman adds. They've got a median income of \$56,800, and, on median average, are 41.4 years old.

Bottom line: The News Looks Bad

At first glance one would expect point-to-point satellite Internet to be as easy as point-to-multipoint. After all, "today the number one opportunity for satellite Internet backbone connectivity," says Gina Dolan, IntelSat's senior product manager for Internet.

What's the problem? Two words: terrestrial networks. Armed with ever-expanding pots of fiber optic-based bandwidth, the world's terrestrial

ers are in a position to cut prices, and make satellite point-to-point's revenue dim indeed.

at it bluntly, "fiber is reducing opportunities in the core business," Bert Lebowitz, NetSat Express' former president and COO, and now a star

Caressi agrees. A research manager for Frost & Sullivan's Communications Services Group, Caressi recently told delegates to the CITE 2001 conference that "where satellite has been used to trunk internet traffic in metropolitan regions -- particularly in China a few years ago -- already been replaced by fiber."

ake matters worse, it's not just inter-city fiber capacity that's growing, also international capacity, as submarine cables reach across the oceans, a fiber optic web strangling satellite traffic at the neck.

big is this growth? Well, within the next two years, there will be about 3 Gbps worth of terrestrial bandwidth available in the South Asian region, says Stephan Beckert, TeleGeography's director of traffic research. While about 7,000 Gbps of fiber will connect the United States to Europe, 1,500 Gbps will run between the United States and Asia.

at things another way, just one of these new cables can carry more traffic than the world's entire satellite fleet combined. Small wonder that those in the industry are worried about satellite point-to-point's viability; especially now that's happened to international point-to-point telephone traffic by satellite. Once the workhorse of this sector, traffic has declined so much that there are no longer any such links between the United States and Germany, the United States and Japan. His conclusion? "The point-to-point era for satellite communications has come to an end."

all this is going on, terrestrial wireless carriers are also hemming in satellite companies, says Jean-Francois Gambart, Alcatel's vice president of marketing and business development.

terrestrial carriers are allowed to continue grabbing spectrum-- notably 3G wireless and other broadband applications--then Gambart fears the satellite industry's future will be put "at risk."

Point-to-Multipoint Has Its Internet Challenges Too

re you ditch all your Internet point-to-point traffic in favor of point-to-multipoint, you should know this latter application has its problems, especially capacity.

illustrate this point, Blum points to Starband. Based on his data, Starband should accommodate at least 20,000 subscribers per transponder to make a profit. Right now Blum estimates the company's got about 8,500 on each.

some of these are early days for Starband; given time, it will likely hit market. But what about broadband? Well, that's where things start to fall apart, Blum says.

For example, say that Starband users start to download 220 kbps video streams, the kind already being delivered by PBS. According to Blum, a single transponder can only support about 200 such users. Even if they turn off the download switch to 16 kbps streamed mono audio, the most each transponder can support is 3,000 users.

result? If it proves popular--and it already has--broadband Internet users could hit satellite ISPs with the double-whammy of lower user-capacity

higher per-user cost. For a nascent industry, this is just plain bad news.

Can the Industry Do?

In the historical decline of point-to-point satellite traffic, and the big problems looming for point-to-multipoint, satellite carriers are faced with some hard choices with respect to the Internet. If they commit themselves too much to this medium, they leave themselves open to the increasing strength of terrestrial competition. But if satellite carriers don't fence, they risk losing this battle before it even begins, by abandoning the field at the outset.

What's the answer? If you can't beat 'em, buy 'em.

By tying terrestrial networks, satellite carriers can play both sides of the street. They can deploy satellites in emerging markets where nothing else exists. Then, as competing terrestrial networks begin to extend their tendrils into the market, satellite carriers can move their traffic onto their own terrestrial networks. This allows them to compete head-to-head on cost and reliability while freeing up their satellites to tackle new opportunities.

That's not all a combined approach offers. By using both satellite and terrestrial networks for Internet service, carriers can direct traffic based on which route makes the most sense. Are 500,000 users trying to simultaneously access the latest Victoria's Secret Webcast? Put it up on satellite. Is most of your traffic moving within certain localized areas? Save transport dollars: put it on fiber optic lines.

This strategy has already been grasped by Bell Canada Enterprises (BCE). Owner of Canada's Bell ExpressVu DBS service and Bell Sympatico's high speed DSL service, BCE recently announced that it was integrating the two in a single top-of-the-line "ComboBox." It's being built by Echostar Communications, which is Bell ExpressVu's prime receiver supplier.

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Customers Accept Integrated Solutions?

Absolutely yes.

"It's because people 'don't care how you move their traffic,'" says Kay Blum, Echostar's vice president of voice data and Internet services. "They want a good connection to the Internet."

Another very simple fact, satellite industry experts are "predicting convergence on a service level, rather than on a technology level," says Blum. "What you're going to see over time are hybrid networks that use terrestrial point-to-point, and an overlay of broadcast broadband coming in via satellite."

Blum agrees. In fact, he believes it's starting to happen right now. After "we've all heard announcements of Intelsat or Panamsat becoming a

communications solutions provider," Beckert says, "rather than a satellite
company that only sells transponders."

ing the Future Successfully

ly, the approach being espoused here runs counter to satellite industry
tradition. In fact, the last 50 years have seen people pitting satellites'
capabilities in a kind of transmission "Holy War," as if respect for one
capability for the other.

satellite industry can no longer afford this kind of thinking if it's
to succeed with the Internet as a long-term proposition. The development of
national voice telecommunications is a warning: where satellites pioneered,
terrestrial networks profit. The only way to win is to be in both.

terrestrial satellite carriers can ignore this advice. In doing so, however,
they are squeezing themselves more and more out of the best markets--
primarily the world urban centers--and increasingly dependent on the worst:
the rural third world.

isn't a value judgement; it's just that the first world has more money to
invest in telecommunications. Unfortunately, the third world doesn't; that's
why satellite telephony has yet to live up to its potential.

also why Iridium and Globalstar found themselves in such deep trouble. By
the time they launched, terrestrial competitors had skimmed the rich cream of
the cellular market. Granted, you still can't get cellular phone service at
the North Pole, or in the Australian Outback. But just how much money is
made by supplying satellite services to these regions? Not much.
Not enough to keep most for-profit businesses alive.

for point-to-point and point-to-multipoint satellite Internet
services like, it's time to take a hard look at adding terrestrial networks.
Today, satellite alone just isn't enough.

Beckert is a contributing writer to Via Satellite.

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Two Way Satellite Delivered Internet

Satellite delivered internet has been around for some time. [DirecPC](#) and other systems have utilized the broadband capability of geostationary satellites to deliver the high bandwidth data stream from Internet servers to the end user. The outgoing requests for WWW pages and files use a normal dial up ISP. The requested data is routed through the satellite to the end users satellite system and into their PC at rates of around 400 Kbps. This data rate may seem small for those who have the luxury of a good cable modem connection or DSL, but it is a welcome alternative for people in underserved communities. The one drawback is having to subscribe to an ISP to service the outgoing requests, thus having to pay an ISP as well as the satellite service provider. Another drawback is that the system ties up a phone line. This may seem trivial, but having to lease another phone line adds to the total system cost, as well as keeping a phone line in use while on the Internet.

Two systems are planning to launch satellite delivered internet that will use a satellite link to send requests to the internet, thus eliminating the need for a telephone line and a separate ISP. This will allow the forward and return paths for data to be completely serviced by satellite. These systems are

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serviced by satellite. These systems are DirecPC (backed by Hughes Network Systems) and the Gilat-To-Home Internet Service (backed by VSAT operator Gilat, MSN and EchoStar). Both systems are targeting the last quarter of 2000 for system launch.

The DirecPC system will utilize the current PanAmSat Ku band satellite, but plans to use the new Spaceway satellite platform that is planned for 2003. The Spaceway satellite operates in the Ka band. DirecPC expects the forward or uplink data speed (into the Internet) to be between 128 Kbps and 256 Kbps. (It is unclear if many users will share this uplink data channel, or if users will be able to transmit data at 128 or 256 Kbps. I suspect that many users will share the uplink data channel.) Downlink or return data speeds (from the Internet) to burst to 400 Kbps for each user, just as the current DirecPC system operates today.

The Gilat-To-Home system will use an unnamed satellite that will be adjacent to satellites in the EchoStar fleet in order to use a single receive antenna to simultaneously receive the EchoStar TV product and the Gilat-To-Home product. The system boasts downlink speeds at 10 times normal modem speeds (which I interpret as between 400 to 500 Kbps), with burst speeds 'considerably higher'. I could not find any information on the uplink speeds expected for the Gilat-To-Home product.

In the past, private VSAT networks were an expensive proposition for remote businesses. I see great potential for utilizing these systems as a low cost solution for remote business offices, offering users high speed access to e-mail, internet and other high speed data services.

The one broadband satellite system that I have not mentioned is Teledesic. This system boasts a constellation of 288 satellites that will cover 95% of the earth's