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Disclosure: Long Gogo Inc. (NASDAQ:GOGO)

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Executive Summary

Gogo Inc. (Nasdaq:GOGO) is the leading provider of internet connectivity to business jets in North America. The company operates a network of air-to-ground (“ATG”) cell towers broadcasting 4G signal on licensed spectrum. This is a razor/razor blade business model where aircraft owners purchase and install connectivity equipment and then pay for a monthly internet subscription. With an install base of over 7,000 airplanes, Gogo has 85% market share and operates at a much larger scale than Viasat, the number 2 player.

There are approximately 25,000 business jets in North America and an additional 15,000 business jets in the rest of the world. Today only one-third of the North American business jet market is penetrated with connectivity and less than 10% of jets in the rest of the world. The penetration rate is expected to approach 100% within the next 10 to 15 years creating a massive secular growth opportunity for Gogo.

In addition to the increasing market penetration rate of business jet connectivity, Gogo’s growth will be catalyzed by two network upgrades in the next two years. First, in the second half of 2023, Gogo will turn on its 5G network at its existing cell towers. The 5G upgrade will triple the average speed customers receive and lift the average revenue per user (“ARPU”) by 25% for users that upgrade. Second, in 2024, Gogo will launch a low-earth-orbit (“LEO”) satellite service that will provide high-speed connectivity globally via the Oneweb LEO constellation. The satellite service will enable Gogo to address the market outside of North America and provide a faster service to price-insensitive customers. The combination of tailwinds and product launches is expected to more than double Gogo’s revenue over the next five years from \$404 million in 2022 to nearly \$900 million by 2027.

Gogo is also very profitable. The company generated a 35% EBIT margin in 2022 and believes margins can expand by up to 15% as it realizes the benefits of operating leverage over the next decade. Gogo’s unit economic model is attractive. Gross margins exceed 80% for the air-to-ground business. The cost to run the ATG network is largely fixed and only requires \$20 million in annual maintenance capex (<5% of revenue). Gogo will not need to build a network for the LEO satellite service and while gross margins will be lower at around 60%, the service will be immediately profitable and incremental to the existing business. Operating profit is expected to increase from \$142 million in 2022 to \$345 million by 2027 with over 90% free cash flow conversion from EBIT. Diluted EPS is expected to reach \$2.15 by 2027, implying 6.5x P/E vs. the current share price of \$13.95.

Assuming Gogo trades in line with peers, the stock could appreciate by 300% to 500% over the next five years if the above financial projections are roughly accurate.

Finally, Gogo is run by an aligned management team with a strong track record. Oak Thorne was appointed CEO in 2018 and successfully turned around the company by divesting the unprofitable business of providing internet connectivity to commercial airlines to focus on the more attractive business of serving private jets. After making





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this business transformation, Thorne brought Gogo to profitability, deleveraged the balance sheet, and reinvigorated the product pipeline. Thorne owns 22% of the company and is the second largest shareholder behind long-term private equity owner GTCR. This is Thorne's third time running a public company. Thorne successfully turned around and sold the first two public companies he ran (Commerce Clearinghouse and eCollege) and has publicly hinted that he could sell Gogo as well.

The opportunity to buy Gogo at a discount exists because most investors associate the company with the commercial airline connectivity market and missed the transformation that occurred during the height of the pandemic in 2020. Investors also overestimate competitive threats posed by ViaSat and Elon Musk's Starlink. ViaSat operates a GEO satellite network that is primarily focused on commercial airlines and government customers. Therefore, ViaSat's solution is optimized for larger airplanes and features antennae that can only fit on large aircraft which represent less than 15% of the business jets currently flying. Starlink is also targeting a much broader total addressable market ("TAM") including the general internet connectivity market which is more than 100x larger than the business aviation market opportunity. There are several complex regulatory and distribution barriers to entry to install connectivity equipment in private jets. Starlink currently has zero FAA certifications and no distribution partners identified for its solution. The proposed Starlink solution also features a large antenna that would not fit most jets and is likely targeted at the commercial airline market.

There are high switching costs in business aviation connectivity and systems cannot simply be ripped and replaced. Gogo has a modular hardware ecosystem that makes it much easier to upgrade to new Gogo products vs. switching to a competing solution. Gogo's 5G network and LEO services will be competitive on both price and performance with the solutions currently proposed by ViaSat and Starlink making it highly likely that Gogo will be able to maintain its leading position in the industry for many years to come.

In conclusion, Gogo is a high-quality and well-run business with an attractive reinvestment runway. The stock trades at a discount today because it is not widely followed and investors have misjudged the competitive landscape.



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Gogo Background



Gogo Inc. (Nasdaq:GOGO) was founded as Aircell in the 1990s to leverage unused cell tower capacity backhaul to provide a telephone service for commercial airlines. The backhaul capacity disappeared by the end of the 1990s and the company pivoted by developing its own cell towers to create an air-to-ground (“ATG”) network to provide internet connectivity to commercial airlines. Gogo launched its commercial airline service with Delta Airlines in 2008. The service was slow and the ATG network didn’t have enough capacity to power the large commercial jets, so Gogo had to lease space from geostationary (“GEO”) satellites. This proved to be a poor business model because leasing from GEO satellites was expensive and much of the capacity went under-utilized which led to low margins.

Gogo raised nearly \$200 million in a 2013 IPO to fund its plan to bring internet connectivity to commercial airlines. The company used funds from the IPO in addition to private capital raised in the 1990s and the early 2000s to build its ATG network, develop communications equipment, establish a deep library of patents, apply for FAA certifications, and set up relationships with aerospace OEMs and maintenance and repair organizations (“MROs”). The massive capital Gogo outlaid for the legacy commercial airline connectivity business created the moat that its private jet connectivity business benefits from today.

Oak Thorne was appointed CEO of Gogo in 2018 to turn around the business. Thorne was already a sizable shareholder in GOGO and a board member at the time of his appointment. Thorne has successfully turned around two other publicly traded businesses, Commerce Clearinghouse and eCollege. Gogo’s business suffered from high capital intensity, cash flow burn, low margins, and a poorly-valued public stock. Under Thorne’s leadership, Gogo sold its commercial connectivity business to Intelsat for \$400 million in 2020 and pivoted to focus on the business jet connectivity business which generated less revenue but was highly profitable.

The business aviation business was launched in 2011 and is the company’s primary business today. Gogo serves private jets in North America with connectivity via its ATG network of 150 cell towers broadcasting 4G internet straight up into the sky on licensed spectrum. By the end of 2023, GOGO will commercially roll out 5G network. Gogo is also planning to launch a low earth orbit (“LEO”) satellite service in the second half of 2024 that will provide faster speeds and global coverage.



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Business Overview

Gogo is focused on providing internet connectivity to business jets in North America. There are over 220,000 aircraft operating in the general aviation market in North America, but most aircraft are small prop planes that are too small to install connectivity equipment on and likely do not have the budget. Within the general aviation market, there are about 25,000 business aviation aircrafts also known as private jets. Private jets start as small as turboprop airplanes and can be as large as commercial jets. There are an additional 15,000 business jets operating outside of North America. Despite accounting for less than 5% of the world's population, North America accounts for over 80% of the world's private jet flight hours.

Of the 25,000 North American private jets, only 8,500 or roughly one-third have connectivity. Gogo counts 7,000 of these jets as customers today implying over 80% market share. Outside of North America, less than 10% of private jets have connectivity. The penetration rate will reach 100% within the next two decades as new jets are line-fit with connectivity equipment and existing jets are upgraded in the aftermarket.

Gogo operates a razor/razor blade business model. It sells equipment for \$50k - \$250k (antennae, onboard switching boxes, Wi-Fi routers) and then charges monthly connectivity fees akin to an internet subscription with an average revenue per user ("ARPU") of around \$3,500 per month.



Image: Gogo 5G antenna mounted on the bottom of a private jet.

What differentiates Gogo's model from a basic wireless phone plan is its extremely high switching cost. Equipment must receive Federal Aviation Administration ("FAA") approval for each model of aircraft. Unlike commercial aerospace where there is a duopoly between Boeing and Airbus, there are half a dozen major private jet manufacturers and dozens of relevant jet models. The equipment must also be installed by an FAA-certified dealer at the factory or at an approved maintenance and repair organization ("MRO") location. Installing connectivity equipment is not an easy lift. It usually requires 3 to 5 weeks of downtime to rewire a jet's power and





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communications lines. Finally, if an owner would like to rip out an existing system, they not only need to pay hundreds of thousands of dollars for the new system, but they also need to pay steep costs to have a certified technician remove the old equipment and patch up the holes. This is why airplane owners are slow to adopt connectivity and generally only find the time during the regularly scheduled maintenance that occurs every five years. Once this equipment is installed, it will most likely stay in for at least 5 to 10 years or longer due to the high switching costs.

Gogo has partnerships with all the major MROs in North America and FAA certifications for virtually every model of private jet making its equipment the default standard for owners interested in internet connectivity.

Gogo's hardware platform is called AVANCE. It is a modular system that makes it easier to upgrade to products within the Gogo ecosystem because it doesn't require a major overhaul of the power and communications systems to upgrade an existing airplane. For example, AVANCE customers will be able to upgrade to the new 5G service by bolting on a new antenna and swapping a box that sits inside the aircraft. The 5G upgrade can be completed in days, not weeks.

There should be a meaningful ARPU lift as customers upgrade to 5G in the coming years. The legacy 4G service provides average connectivity speeds of 8 megabits per second and costs \$4,400 per month for an unlimited data plan. The new 5G service will deliver average speeds of 25 Mbps (peak speed of 80 Mbps) and pricing starts at \$5,000 for a 10 GB data plan.

The unit economics of Gogo's ATG network are attractive. The network is already built out and requires just \$20 million in annual maintenance capex. Gross margins for providing connectivity exceed 80% and corporate overhead costs are mostly fixed.

Gogo's latest product announcement is a low-earth-orbit ("LEO") satellite service called "Global Broadband" scheduled to launch in 2024. Global Broadband will enable global high-speed connectivity for jets, expanding the company's total addressable market ("TAM") outside of North America. The system will also enable even faster service speeds over North America because of a unique feature that will allow customers to combine the Global Broadband service with the 5G network.

The Global Broadband service is enabled by partnerships with Oneweb and Hughes. Oneweb is a UK based company that has already deployed two-thirds of its LEO satellite constellation and will complete the remaining one-third by Spring 2024. Therefore, Gogo will not need to shell out the capex to build a new network. Hughes has been contracted to build the first commercially viable electronically steerable antenna ("ESA") capable of managing a broadband service for private jets. The Hughes antenna is fully compatible with Gogo's AVANCE system and will enable an easy upgrade for existing customers.

Gogo will buy bandwidth wholesale from Oneweb and mark up the data rates to customers on a per flight basis. This will result in a lower gross margin for the LEO service in the low 60% range. However, Global Broadband is a highly complementary product that lacks significant incremental investment or corporate overhead and will therefore be immediately accretive to Gogo's existing business model and financial performance.





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The Global Broadband service is a win/win for Gogo and its partners. Gogo is flexing its ability to manage the go-to-market function and FAA regulatory process while Onweb provides infrastructure. Based on the current specifications, Global Broadband should be competitive on price and performance with other next generation connectivity services proposed by competitors.

Competitive Landscape

The only real competitor to Gogo available today is from Geostationary (“GEO”) satellite providers ViaSat and Inmarsat. The legacy GEO services deliver average speeds of 5 megabits per second and have an average price tag of \$10k - \$20k per month before accounting for much more expensive equipment costs that can add an additional \$10k per month to the total cost of ownership. This amounts to a total cost of ownership for GEO satellite connectivity of \$20k - \$30k per month vs. <\$10k for Gogo’s ATG service.

GEO satellite services are slower and more expensive, but they enable international connectivity over the Atlantic Ocean and in Europe. With the pending merger of ViaSat and Inmarsat and the launch of a few planned satellites (i.e. ViaSat-3 launch), the coverage will be nearly global and the average speeds will be improved to 30 megabits per second with the next generation Ka-band.

However, ViaSat’s core business is serving the government and commercial airline segments. It has optimized its antennae and connectivity equipment for larger aircrafts and cannot accommodate mid-sized and light jets. ViaSat’s next-generation satellite will only be addressable to large private jets representing <15% of the market. ViaSat also lacks FAA certifications on many of the key models even in the large jet segment of the market. Gogo could lose market share in the large jet segment to the ViaSat-3 satellite service but there will be enough overall market growth to more than offset any customer losses.

Elon Musk’s Starlink represents a future competitive threat. Starlink operates a low-earth-orbit satellite constellation and already offers internet services to residential homes, businesses, boats, and government customers. Starlink has announced a product for private jets that could be launched by the end of 2023. However, even if the Starlink service is ready by 2023, the go-to-market will be challenging. Starlink has no MRO partners and appears to be offering a DIY solution for jet owners. Starlink’s proposed pricing starts at \$25,000 per month – over 5x Gogo’s price. Finally, like ViaSat, Starlink’s antenna will only fit on larger airplanes. The industry consensus is that Starlink is serious about competing for commercial airline and government business but hasn’t been very focused on the business aviation market.

It is important to note that Gogo’s ATG network will always have a low-cost advantage over a satellite provider. Gogo’s cell tower network is already built out and only requires \$20 million in annual upkeep. To contrast, the ViaSat-3 satellite has an estimated cost of \$2.5 billion and a 15-year useful life; that comes out to \$166 million per year in set-up cost and doesn’t take in to account the maintenance of ground stations. The Starlink constellation has an estimated set-up cost exceeding \$10 billion and multi-billion maintenance capex costs because its satellites have a useful life of just 5 years.

Finally, Gogo’s network upgrades to 5G and Global Broadband should allow it to remain competitive on speed and coverage. In fact, Gogo is poised to have the best connectivity product in North America due to its ability to simultaneously provide 5G and LEO satellite connectivity.



SmartSky Lawsuit

Gogo has one more competitor called SmartSky which wouldn't be worth discussing in detail if it weren't for a lawsuit filed by SmartSky claiming that Gogo has infringed on patents.

SmartSky was founded in 2011 and spent 10 years developing its technology before it launched an air-to-ground network in mid-2022. SmartSky's current product is faster than Gogo's 4G service and is priced at a discount but it has failed to gain any traction in the market. The business aviation market is extremely fragmented making it difficult for a new entrant like SmartSky to scale. Furthermore, Gogo has long-term agreements with all the major fleet operators, dealers, and MROs that operate, sell, and service these products. Finally, SmartSky's current speed advantage will disappear by the end of 2023 when Gogo's 5G service is launched and will fall even further behind following the launch of the LEO satellite service.

Seemingly in an act of desperation, SmartSky is suing Gogo over patent infringement. The lawsuit was filed in March 2022 and a trial is set to begin in spring 2023. The patents relate to GOGO's un-launched 5G service which uses similar beamforming technology to blast jets with connectivity. Gogo is very familiar with the SmartSky patent portfolio as it previously sought to invalidate certain patents with an inter party review ("IPR"). Gogo has made strong public statements in its defense over the infringement cast and a judge dismissed SmartSky's request for an injunction on Gogo's 5G launch.

Based on the circumstances of the lawsuit and reports on the case, it seems unlikely that Gogo has infringed on the patents. There is a high bar for patent infringement and SmartSky's lawsuit only relates to Gogo's 5G service which hasn't even been commercially launched. Therefore, SmartSky hasn't been able to inspect the technology to factually know if there has been infringement – they are just going by what has been disclosed in marketing materials.

The trial will commence in the coming months and will take 1-2 years to be settled. While there is some uncertainty as to the outcome, the downside is likely limited for Gogo. First, the scope of the lawsuit is narrowed to the 5G service which hasn't launched yet and will take a few years to be a large part of the sales mix. Second, half of the SmartSky patents in the lawsuit are set to expire within the next 3 years.

In a worst-case outcome, Gogo would need to pay a revenue royalty on the 5G service. A royalty would eat into Gogo's margins but wouldn't destroy the unit economics of the business. Gogo's stock price has been punished since the lawsuit was filed and a resolution could serve as a positive catalyst for investors.

Financial Results and Valuation

Since the divestiture of the commercial airline segment in 2020, Gogo's revenue has grown at a double-digit rate, operating margins have expanded to 35%, free cash flow has inflected from negative to positive, and the balance sheet leverage has been substantially reduced to 3.1x net debt to EBITDA.

Gogo is expected to continue growing revenue at a high-teens rate over the next five years. This will be driven by continued penetration of connectivity on private jets, expansion of the TAM from new product launches, and rising ARPU from customer service upgrades. The base case model (shown below) assumes a 17% revenue CAGR from 2022 to 2027 which is in line with management's long-term guidance.



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Gogo's business benefits from extremely high operating leverage. The 4G/5G ATG network has already been established aside from \$9 million in growth capex for 5G in 2023. Beyond 2023 maintenance capex requirements are \$15 to \$20 million per year and will not require further investment. ATG's gross margin is 80% and virtually all incremental gross profit will fall to the bottom line.

Gogo will invest ~\$50 million through the opex line into the development of the Global Broadband service. Because Gogo is using Oneweb's infrastructure, it will not outlay capex for the LEO satellite network. The Global Broadband service is highly complementary to existing revenue but doesn't require much additional overhead expense. The gross margin profile will be in the low 60% range and incremental revenue growth will be immediately accretive to earnings.

Gogo generated a 43% EBITDA margin in 2022 and a 35% EBIT margin. Margins will be constrained over the next 2 years as the company invests in 5G and LEO satellite services but operating margins have the potential to ramp by 10% to 15% over the next 5 to 10 years as greater scale is achieved. And due to low maintenance capex, EBIT roughly equates to maintenance free cash flow.

Management is guiding free cash flow to exceed \$200m by 2025 and to continue to grow from there. Over the next 5 years, the model projects revenue doubling, EBIT tripling, free cash flow quadrupling, and EPS exceeding \$2.00 per share. Based on a 20x EPS exit multiple, the projected earnings imply a mid-20% investment IRR over the next 3 to 5 years. The expected IRR is similar when using a 15x EBIT exit multiple. A bear case scenario where Gogo is required to pay a patent royalty to SmartSky would reduce the expected IRR to the high teens.





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Gogo Valuation Framework (Base Case)

	<u>2020</u>	<u>2021</u>	<u>2022</u>	<u>2023E</u>	<u>2024E</u>	<u>2025E</u>	<u>2026E</u>	<u>2027E</u>
Revenue	\$269.7	\$335.7	\$404.1	\$446.4	\$531.2	\$634.6	\$750.6	\$886.1
Growth %	(12.7%)	24.5%	20.4%	10.5%	19.0%	19.5%	18.3%	18.1%
Adj. EBITDA	\$98.3	\$151.0	\$173.8	\$156.7	\$204.2	\$265.9	\$335.2	\$414.8
Margin %	36.5%	45.0%	43.0%	35.1%	38.4%	41.9%	44.7%	46.8%
Adj. EBIT	\$76.4	\$122.2	\$142.3	\$121.7	\$162.6	\$216.2	\$276.4	\$345.4
Margin %	28.3%	36.4%	35.2%	27.3%	30.6%	34.1%	36.8%	39.0%
Net Income	(\$48.6)	\$156.6	\$92.1	\$84.1	\$121.7	\$171.1	\$225.8	\$287.8
Margin %	(18.0%)	46.6%	22.8%	18.8%	22.9%	27.0%	30.1%	32.5%
Diluted Shares	82.3	127.2	133.9	133.9	133.9	133.9	133.9	133.9
EPS	(\$0.59)	\$1.23	\$0.69	\$0.63	\$0.91	\$1.28	\$1.69	\$2.15
Growth %	(46.1%)	(308.5%)	(44.2%)	(8.6%)	44.7%	40.5%	32.0%	27.5%
Oper. Cash Flow	\$4.5	\$66.7	\$103.4	\$114.6	\$158.0	\$214.4	\$277.0	\$348.4
Capex	(\$9.0)	(\$7.7)	(\$49.9)	(\$35.0)	(\$30.0)	(\$20.0)	(\$20.0)	(\$20.0)
Free Cash Flow	(\$4.5)	\$59.0	\$53.5	\$79.6	\$128.0	\$194.4	\$257.0	\$328.4
Margin %	(1.7%)	17.6%	13.2%	17.8%	24.1%	30.6%	34.2%	37.1%

	<u>Cap Table</u>		<u>2023E</u>	<u>2024E</u>	<u>2025E</u>	<u>2026E</u>	<u>2027E</u>
Stock Price (4/21/23)	\$13.95	EV/EBITDA	15.2x	11.6x	8.9x	7.1x	5.7x
Diluted Shares	133.1	EV/EBIT	19.5x	14.6x	11.0x	8.6x	6.9x
Market Cap	\$1,856	P/E	22.2x	15.3x	10.9x	8.3x	6.5x
Cash	\$175.3	EV/FCF	29.9x	18.6x	12.2x	9.3x	7.2x
Total Debt	\$697						
Enterprise Value	\$2,378	Sh Price @ 20x EPS	\$12.56	\$18.18	\$25.55	\$33.72	\$42.99
		IRR @ 20x EPS	(9.9%)	14.2%	22.3%	24.7%	25.2%
		Sh Price @ 15x EBIT	\$10.24	\$15.62	\$22.90	\$31.35	\$41.29
		IRR @ 15x EBIT	(26.6%)	5.8%	18.0%	22.4%	24.2%

Source: LVS Advisory Estimates.

Based on Wall St. consensus numbers, Gogo trades for 24x 2023E P/E and 19x 2023 EV/EBIT. These trading levels appear reasonably cheap given the top and bottom line growth expected. Assuming modest multiple compression, Gogo's stock price should conservatively double over the next 5 years. If the company allocates capital intelligently, a triple or better for the stock could be in the cards from the current share price of \$14.



Management and Governance

Aside from business quality, investors can rely on the quality of the management team. Oak Thorne was appointed CEO in 2018 and has successfully executed a turnaround. Thorne quickly moved to divest the unprofitable commercial airlines business and has since brought Gogo to profitability, reduced balance sheet leverage, and reinvigorated the product pipeline.

Thorne was already one of Gogo's largest shareholders before his appointment and continues to maintain a 22% ownership stake, making him the second largest owner. Private equity firm GTCR is the largest shareholder with a 25% ownership stake. GTCR was a pre-IPO investor and has not sold down its stake. GTCR maintains a board seat.

This is Thorne's third time running a public company having successfully turned around and sold his first two businesses. In the 1990s, Thorne was the CEO of Commerce Clearinghouse, a publisher of legal documents. Under his leadership, the company transformed from a legacy publisher to a legal software business and was eventually sold. In the 2000s, Thorne became CEO of an online education company called eCollege. Thorne became CEO after the stock price crashed following the Dot Com bubble and was able to sell the company in 2007 at a valuation 5 times greater than when he became CEO. Thorne has hinted publicly that Gogo may also eventually be sold.

Concluding Thoughts

In conclusion, Gogo is a high-quality business operating in a structurally growing industry. The business is well-managed by highly incentivized insiders. The stock is not widely followed by investors and the investors that are aware of the company do not fully appreciate the business transformation and turnaround that has taken place. The market is also concerned about growing competitive risks; however, these fears are likely over-blown and provide an opportunity to buy shares in Gogo at attractive prices.



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