

The Complexity Underlying JetBlue's Privacy Policy Violations

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Abstract

This report examines the recent privacy breach case in which JetBlue Airways violated its privacy policy when it gave the travel records of five million JetBlue customers to Torch Concepts, a private subcontractor to the Department of Defense (DoD). Our study is novel in that it uses two complimentary approaches to analyze a company's privacy practices: goal-driven requirements engineering and information flow modeling among various parties (actors) involved in this case. In addition to the direct violation that is currently the subject of an FTC (Federal Trade Commission) investigation, our analysis reveals that JetBlue's actual privacy policy contains ambiguities and violations. Additionally, the complexity of our actor/information flow model elucidates the importance of organizations establishing clear contractual relationships to specify permissions, obligations and responsibilities for all parties.

1 Introduction

On September 19, 2003, JetBlue Airways publicly acknowledged it had provided the travel records of five million JetBlue customers to Torch Concepts [1, 2, 3, 4], a private DoD subcontractor for an antiterrorism study to track high-risk passengers or terrorists [5, 6]. Torch Concepts then purchased additional customer demographic information (including social security numbers, etc.) about these passengers from Axiom, one of the largest data aggregation companies in the U.S. [4, 7]. The information from JetBlue and Axiom was then used by Torch Concepts to develop passenger profiles [2]. This transfer of data not only directly violated JetBlue's privacy policy [8], it may have also violated Federal privacy laws. The FTC and the DHS (Department of Homeland Security) are currently investigating JetBlue Airways [9] and this case serves as the focus of the investigation discussed herein.

There have been numerous accounts in the press about what transpired, but no definitive public report. Thus, our work is not based upon a direct description of all that happened. Instead, our work is based upon information obtained from various public WWW sites, coupled with reports posted on the network that we assume are original. The following analysis is derived from analysis of these materials and press reports.

The remainder of this paper is structured as follows. Section 2 examines the contents of a Torch Concepts report that details how the information obtained from JetBlue was aggregated with information purchased from Axiom. Section 3 models the relationships and information exchanges among the parties involved in the JetBlue Airways case. Section 4 provides an analysis of the JetBlue Airways privacy policy. Finally, Section 5 summarizes our findings.

2 The Torch Concepts Homeland Security Report

Torch Concepts, a company with no posted online privacy policy, displayed blatant disregard for the personally identifiable information of the individuals in the JetBlue passenger travel records as evidenced by their posting of a document entitled, "Homeland Security - Airline Passenger Risk Assessment," on the Internet [2]. This Torch Concepts document contained the SSN (Social Security Number) and DOB (Date of Birth) of specific passengers. At a time when millions of American are falling prey to identity thieves who prey on SSNs and DoBs, this act is inexcusable. Torch Concepts removed the report from the Internet on September 17, 2003. But by that time, it had already been reposted on several mirror websites [1, 2, 10].

The Torch Concepts document explains that the JetBlue passenger information database was matched with information purchased from Axiom to determine gender, home specifics (renter/owner), years at

residence, economic status (income), number of children, SSN (Social Security Number), number of adults, occupation, vehicles owned, etc. for 40% of the passengers in the JetBlue database [2]. Torch Concepts was able to leverage the information provided by JetBlue (which they claimed to be limited) into a much larger corpus of information by purchasing demographic information from Axcion to augment the JetBlue passenger information database.

Finally, Torch Concepts found a pattern of anomalous records that they believe exists because of erroneous entry, fraud or mischief [2]. While this may be true, it may also be the case that they have misidentified otherwise law-abiding citizens — a problem which many suspect will also plague the CAPPS II (Computer Assisted Passenger Prescreening System) [11]. CAPPS II is the next generation passenger screening system administered by the TSA, a unit of the DHS. The system has been controversial because it would allow the government unprecedented power to run background checks on Americans who fly without providing due process protection for those who are unfairly tagged as terrorists.

3 Modeling the Relationships and Information Flows Among the Involved Parties

The JetBlue case is more complex than previously publicized privacy breaches because of the larger number of parties (actors) involved. We modeled this complexity by focusing on the actors, the actual information obtained and used by each of these actors, and whether or not each actor publishes its privacy policy on its website. This model, shown in Figure 1, portrays the apparent contractual relationships in this information transfer and policy violation case. By modeling the various actor dependencies and information flows, we are able to reveal vulnerabilities that, in the case of JetBlue, resulted in unfortunate privacy breaches.

This model, shown in Figure 1, portrays the relationships among the many actors that in some way handled the sensitive customer information that was first collected by JetBlue and later aggregated by Torch Concepts with additional information from Axcion. The model allows one to develop a better understanding of the internal and external data flows in the JetBlue case. We now discuss these actor relationships and information flows in more detail. According to the JetBlue privacy policy, its ticketing functionality is powered by OpenSkies; however, the exact information that is shared by these two parties is still unknown. At a minimum, one must assume that OpenSkies in some way handles the flight ticketing information and financial information of JetBlue customers.

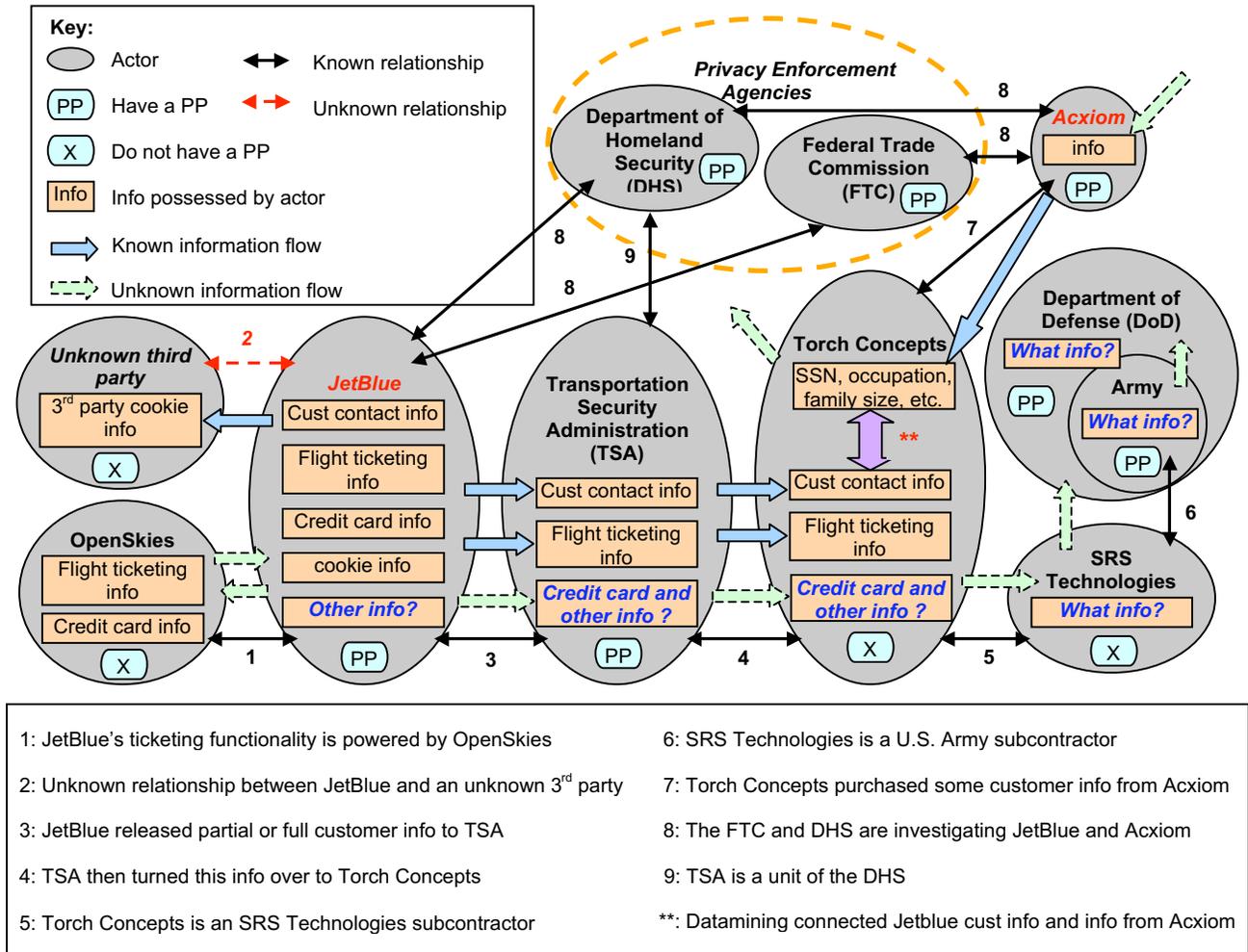
After the case was disclosed by the press, JetBlue issued a press release [5] that claims they only released customer contact and flight information to Torch Concepts. However, other sources [1], including the Torch Concepts report [2], reveal JetBlue actually turned over the full travel records of nearly 5 million passengers. Although JetBlue claimed that “no identifiable customer data was released to any third party, including the Department of Defense or the Transportation Security Administration (TSA)” [5], other sources report that JetBlue first gave the records to the TSA which in turn gave the data to Torch Concepts [1]. In Figure 1, we model this relationship according to the information in [1].

As discussed in Section 2, Torch Concepts purchased additional information about the JetBlue passengers from Axcion for use in testing its data-mining theories [1]. Specifically, JetBlue passenger travel records from 2001 and 2002 were matched with data obtained from Axcion to determine passengers’ SSN, DOB, occupation, family size, etc. These profiles were then used to flag potential terrorists. The authors are uncertain about how or from where Axcion collected so much sensitive information about consumers. This is denoted using a dotted arrow to Axcion in Figure 1.

Whereas questions remain about further dissemination of this information by Torch Concepts to other organizations including SRS Technologies, the U.S. Army and the Department of Defense, we do know that Torch Concepts further jeopardized the privacy of customer information when its CEO presented the data-mining results at a conference organized by the Tennessee Valley chapter of the national Defense Industries Association on February 25, 2003 [1]. The presentation, which was available on the Internet for over six months, contained a slide with specific customers’ SSN, DOB, name, address, etc. [2]. Given the unknown number of actors to which this information was leaked, it is denoted with an outgoing dotted arrow from Torch Concepts in Figure 1. As we mentioned in the introduction, this document is now being reposted in several mirror websites [1, 2, 10]. On some mirror websites, the offending slide was blacked out to protect victims’ identities. However, on other websites, customers’ personal information is still available

for free download. We sent email to these websites requesting that they black out the slide containing sensitive information before we published this report.

Figure 1: The Actor Relationship and Information Flow Model of the JetBlue Case (Sept. 2003)



An organization's on-line privacy policy, when present, can be viewed as that organization's most encompassing policy especially given that no real distinction is made between online and in-person transactions or sales. In fact, some airlines charge less for tickets purchased online. Similarly, just because an organization does not have a privacy policy posted online does not mean that they do not have one at all. However, if such an organization is engaged in business with the public, it means that there is no certainty about what may be encompassed within their policy, or that it will not be arbitrarily changed. As shown in Figure 1, neither of the two parties to whom JetBlue's customer travel records were entrusted (OpenSkies and Torch Concepts) has an online privacy policy. Moreover, neither does SRS Technologies. This suggests that JetBlue (or the U.S. Army as the contractor of this effort) either completely disregarded the sensitivity of their customers' information or was possibly reckless in creating contractual relationships with other organizations before first examining the privacy practices and policies of those organizations to ensure compliance.

4 Using Goal-Driven Analysis to Identify JetBlue Policy Violations and Vulnerabilities

To develop a better understanding of JetBlue’s privacy practices, we employed a content analysis technique, goal-mining (the extraction of goals from text artifacts) [12], to analyze JetBlue’s online privacy policy. Decomposing policy statements into goals makes it easier to establish an objective understanding of an organization’s privacy practices and policies. The extracted goals are expressed in structured natural language. These goals were documented in a web-based Privacy Goal Management Tool (PGMT) developed at North Carolina State University (NCSU) [13]. The transformation of privacy practices into structured goal statements condenses the typically long and legally-laden statements into an objective unit — goals — that can be easily compared to other policies. To identify goals, each statement in the JetBlue privacy policy was analyzed by asking, “What goal(s) does this statement or fragment exemplify?” and/or “What goal(s) does this statement obstruct or thwart?” All action words are possible candidates for goals. Goals in privacy policies are thus also identified by looking for useful keywords (verbs). The identified goals are worded to express a state that is true, or the condition that holds true, when the goal is realized. For example the goals G_{328} : DISCLAIM resp[onsibility] for privacy and security at other sites that we may link to and G_{1173} : AVOID sharing CI collected on this site with any 3rd parties were both extracted from the JetBlue privacy policy. A total of 17 goals were identified from JetBlue’s privacy policy and these goals are listed in Table 1.

Table 1: Goals extracted from JetBlue privacy policy (September 2003)

Goal ID	Goal	Actor	Classification
G_{1176}	AVOID collecting offline contact info from children	JetBlue	Protection
G_{20}	AVOID collecting PII from children w/o parental consent	JetBlue	Protection
G_{177}	AVOID distributing [children's] PII w/o prior parental consent	JetBlue	Protection
G_{1179}	AVOID enticing children with game/prize/other activities to divulge more info than needed to participate in necessary booking activity	JetBlue	Protection
G_{1173}	AVOID sharing CI collected on this site with any 3rd parties	JetBlue	Protection
G_{749}	COLLECT CI from our website	JetBlue	Vulnerability
G_{1149}	COLLECT demographic info	JetBlue	Vulnerability
G_{770}	CONTACT cust service for questions about PP	Customer	Unclassified
G_{328}	DISCLAIM resp for privacy and security at other sites that we may link to	JetBlue	Vulnerability
G_{556}	INFORM cust/consumer of org privacy practices	JetBlue	Protection
G_{1178}	PROHIBIT [children] public posting / distribution of contact info w/o prior parental consent	JetBlue	Protection
G_{1174}	PROTECT CI with secure servers	JetBlue	Protection
G_{1172}	USE cookies (optional) to save CI so users only have to enter it once	JetBlue	Vulnerability
G_{1170}	USE IP address to administer institution's website	JetBlue	Vulnerability
G_{1169}	USE IP address to diagnose problems with institution's server	JetBlue	Vulnerability
G_{735}	USE PII to offer products/services	JetBlue	Vulnerability
G_{1175}	USE security measures to protect against loss/misuse/alternation of info under institution's control	JetBlue	Protection

Once goals are identified, they are classified as either privacy protection goals or vulnerabilities. We have developed a privacy goal taxonomy in which privacy statements are broadly classified as either privacy protection goals or privacy vulnerabilities [12]. *Privacy protection goals* express desired consumer privacy rights protections, whereas *privacy vulnerabilities* describe practices that potentially threaten consumer privacy. These two dimensions, privacy protections and privacy vulnerabilities, are extensively intertwined, but are not clearly separated in website privacy policies. However, it is important to help end-users clearly distinguish between practices that protect one’s privacy and practices that introduce potential vulnerabilities. The taxonomy thus provides a framework for understanding relevant privacy issues concerning how institutions treat customer data and the goals make it easier to evaluate an organization’s privacy policy within the context of this framework. The fourth column in Table 1 lists the classification for each goal extracted from the JetBlue privacy policy, 41% of which express vulnerabilities to customers’ information. Most of the vulnerabilities (5 of 7 goals) concern information collection. The existence of so many vulnerabilities in an organization’s privacy policy should itself be of concern to consumers.

Unfortunately, it is difficult for customers to discern this from a simply reading of a privacy policy, which is typically unintelligible by the average Internet user [13].

Findings

Our analyses enabled us to identify potential vulnerabilities and specific privacy violations by JetBlue as we now discuss.

JetBlue shared personal information with third parties.

JetBlue directly violated its privacy policy that states, “The financial and personal information collected on this site is not shared with any third parties” (G_{1173}). This occurred when passenger travel records were given to Torch Concepts at the request of the DoD (Department of Defense).

JetBlue committed a violation of omission by failing to express their use of third party cookies.

JetBlue’s privacy policy expressed a cookie related goal: G_{1172} (see Table 1). Cookies are usually set on client machines without the user’s awareness if the user does not have protective browser settings. Given that JetBlue’s privacy policy does not instruct users how they may set their browser to prompt/block cookies the “optional” use of cookies is not really optional (see Appendix). Instead, it places the burden on users to learn how to set their browser to block cookies, many of whom do not even know what cookies are. Perhaps of greater concern is the fact that JetBlue allows a third party (2o7.net) to set cookies even though there is no mention of third party cookies in the privacy policy. Upon visiting the JetBlue website with our browser set to be prompted before accepting all cookies, we were asked to accept a cookie from 2o7.net. Before accepting this cookie we investigated 2o7.net and were unable to learn anything about this third party or why a cookie was being set by them. If 2o7.net is a third party, as we suspect, this too violates the JetBlue policy simply by its omission of expression in the policy. This is portrayed in Figure 1 as a relationship between JetBlue and an unknown third party.

JetBlue’s policy reveals a contractual vulnerability with OpenSkies, Inc.

JetBlue’s privacy policy states that they outsource their ticketing support to OpenSkies Inc. However, the privacy policy is unclear about how and what information JetBlue actually shares with OpenSkies. Moreover, JetBlue explicitly disclaims responsibility for the privacy practices of other websites that JetBlue provides links to. Even though there is no physical link from the JetBlue website to the OpenSkies website, given the proximity of these privacy statements in the policy, one can only assume that JetBlue thus disclaims responsibility for OpenSkies’ privacy practices. Our visit to the OpenSkies website reveals that they do not even have a privacy policy posted. Thus, JetBlue is sharing sensitive customer information with no control over how their affiliates are protecting their customers’ information. Once again, the burden is placed on the end user to determine if OpenSkies will protect sensitive customer information.

Ambiguities in JetBlue’s privacy policy point to potential vulnerabilities, raising a virtual red flag.

The JetBlue privacy policy, states “Our ticketing functionality is powered by OpenSkies Inc. The financial and personal information collected on this site is not shared with any third parties.” The careful reader will note that from these two sentences, the subject to which “this site” refers is unclear. If it refers to JetBlue, it is unclear why JetBlue is collecting financial information and how this information is collected given that the ticketing functionality is powered by OpenSkies. If it refers to OpenSkies, JetBlue is claiming the practices of OpenSkies as its own. Finally, this directly contradicts the statement: “JetBlue is not responsible for the privacy practices or the content of such Websites.”

The JetBlue privacy policy over-emphasizes COPPA-related issues.

Five of the 17 goals expressed in the JetBlue privacy policy concern collection of information from children. However, JetBlue’s online business/practices basically have nothing to do with children. Given this unusual emphasis on COPPA-related (Children’s Online Privacy Protection Act) issues, one is left to assume lack of awareness or experience in policy specification on the part of JetBlue’s privacy policy author. Ironically, some JetBlue customers’ number of children were among the information that Torch Concepts used in its data mining efforts.

5 Conclusions

The preceding analysis was conducted on materials found on the WWW. As such, there may be other information that we have not seen that could provide additional details. Our objective was to provide a holistic analysis given the information currently available to the public. Whether the U.S. government should develop passenger prescreening systems, such as CAPPS II, is beyond the scope of this paper. However, the JetBlue Airways privacy policy violation case is so complex and the impacts so far reaching that it must be studied by anyone concerned about consumer privacy protection. We conclude our report with several observations and recommendations.

First, as discussed in Section 3, many organizations handled sensitive information in the JetBlue Airways case, three of these organizations do not have an online privacy policy (OpenSkies, Torch Concepts and SRS Technologies). This causes one to speculate about whether these organizations are committed to protecting the privacy of those individuals whose information they collect and handle. Organizations with website presence on the Internet should make a concerted effort to publicly post their privacy practices and policies. Posting a privacy policy online is subtle form of self-regulation and ensures that organizations are accountable for their actions. However, it is also important to ensure ones policies are complete and accurate.

Second, organizations must go beyond simply posting an online privacy policy. Care must be taken to ensure that a policy well-written and accurate. Our evaluation of the JetBlue privacy policy revealed ambiguities, violations, vulnerabilities, over-emphasis of some items at the expense of omitting other items of greater importance (see Section 4). Organizations should employ privacy policy specification templates or wizards in conjunction with the techniques discussed in this report (actor/information flow modeling and goal-driven analysis) to avoid the weaknesses exhibited in the JetBlue policy and to ensure compliance with their policies.

Third, even though a company may have a well-written privacy policy, it does not guarantee consumer privacy protection. JetBlue violated its privacy policy by disclosing customer information to third parties without informing its customers. Although it is challenging for organizations to enforce their privacy policies, the introduction of privacy legislation (COPPA, GLBA and HIPAA) has sparked a concerted movement in regulated industries to aggressively comply with the policies and governing laws. This case suggests a need for comprehensive privacy laws governing all business entities, especially those not subject to existing laws as well as policy enforcement and auditing technologies.

Fourth, at a time when recent abuses of powers by CEOs has led to public outcry for those in a position of power to be held accountable for their actions, the public disclosure of sensitive passenger information by the Torch Concepts CEO at a conference, followed by wide dissemination of that report on the Internet can be characterized, at a minimum, as negligent. The Australian Crime and Misconduct Commission defines misconduct as "any corrupt or serious misconduct relating to the performance of a public official's duties that: is dishonest or lacks impartiality, or involves a breach of trust, or is a misuse of officially obtained information"¹. The FTC and DHS investigations will ultimately determine whether the involved parties misused the obtained information. However, this case certainly breached the trust of passengers who flew JetBlue Airways during 2001 and 2002.

Fifth, in the JetBlue case, Torch Concepts purchased a large amount of sensitive consumer data from Axiom. From the type of information (e.g. SSN, home renter/owner, years at residence, family income, occupation family size, etc.), we might infer this data was obtained somehow by Axiom from credit bureaus or credit card companies. The fact that sensitive information can be purchased in the marketplace poses serious potential privacy vulnerabilities and really concerns consumers. Once again, this highlights the urgent need for comprehensive privacy laws governing all business entities, especially credit bureaus.

Sixth, the JetBlue case involved many parties (some which JetBlue may have been aware of). We observed that the existence of so many contractual relationships, marked by widespread transfer of sensitive information, increases the likelihood for privacy vulnerabilities (see Figure 1). Many organizations, especially financial institutions, are increasingly establishing contractual relationships with subsidiaries, affiliates and business partners. These relationships are complex and beyond the

¹ <http://www.cmc.qld.gov.au/REPORTING.html>

understanding of consumers. When organizations disclaim responsibility for the privacy practices of those organizations with whom they share a contractual relationship, it places an unfair burden on the end user to ensure determine if all parties can be trusted to guard an individual's privacy. Organizations should realize that it behooves everyone to establish concrete and enforceable rights permissions and obligations with all parties to avoid the kinds of privacy breaches committed in the JetBlue case.

The JetBlue Airways case exemplifies the need for organizations to explicitly consider internal and external rights, obligations and permissions to ensure they operate according to their policies. In this report, we used goal-driven analysis to enable us to develop an understanding of JetBlue's privacy policies as well as to identify potential vulnerabilities. Additionally, we modeled the parties involved in the case in conjunction with the information transactions that transpired leading up to an FTC and DHS investigations. By modeling relational commitments and communication among parties (actors), we can consider rights and their conditions of legitimacy, relative to the relevant circumstances. We can also know when there is a need to ask whether a company is entitled to disclose certain information according to its published policy.

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Appendix A — JetBlue's Online Privacy Policy

(Downloaded on September 24, 2003, two days after the FTC and DHS announced JetBlue investigations)

JetBlue Airways has created this privacy statement in order to demonstrate our firm commitment to privacy. The following discloses our information gathering and dissemination practices for this website: JetBlue.com.

We use your IP address to help diagnose problems with our server, and to administer our Web site. We use cookies (optional), to save your name, email etc. so you don't have to re-enter it each time you visit our site.

Our optional site's registration form requires users to give us contact information (like their name and email address) and demographic information (like their zip code). We use customer contact information from the registration form to send the user updates and offers from JetBlue. This site contains links to other sites. JetBlue.com is not responsible for the privacy practices or the content of such Websites.

Our ticketing functionality is powered by OpenSkies Inc. The financial and personal information collected on this site is not shared with any third parties, and is protected by secure servers.

Security

This site has security measures in place to protect against the loss, misuse and alteration of the information under our control.

Children's Guidelines

It is the policy of JetBlue Airways:

1. NOT to seek to collect online contact information from children without prior parental consent or parental notification.
2. NOT to seek to collect personally identifiable offline contact information from children.
3. NOT to distribute to third parties any personally identifiable information with out prior parental consent.
4. NOT to give the ability to publicly post or otherwise distribute personally identifiable contact information without prior parental consent.
5. NOT to entice children with the prospect of a special game, prize or other activity or to divulge more information than is needed to participate in the necessary booking activity.

Contacting the Web Site

If you have any questions about this privacy statement, the practices of this site, or your dealings with this Web site, you can contact us at DearJetBlue.com.