Ribbon Identity Hub Services

Ribbon Identity Hub Services Description

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This Service Description document describes the Ribbon Communications Inc. ("Ribbon") Identity Hub services for mitigation of telephony fraud and robocalls. Ribbon offers Identity Hub services as a software as a service ("SaaS").

SaaS Deployment Model

Ribbon provides a suite of "as a Service" capabilities to suit a broad range of Managed Service Provider ("MSP") business requirements. The service defined herein sits within the SaaS category outlined below in Figure 1. SaaS offer.
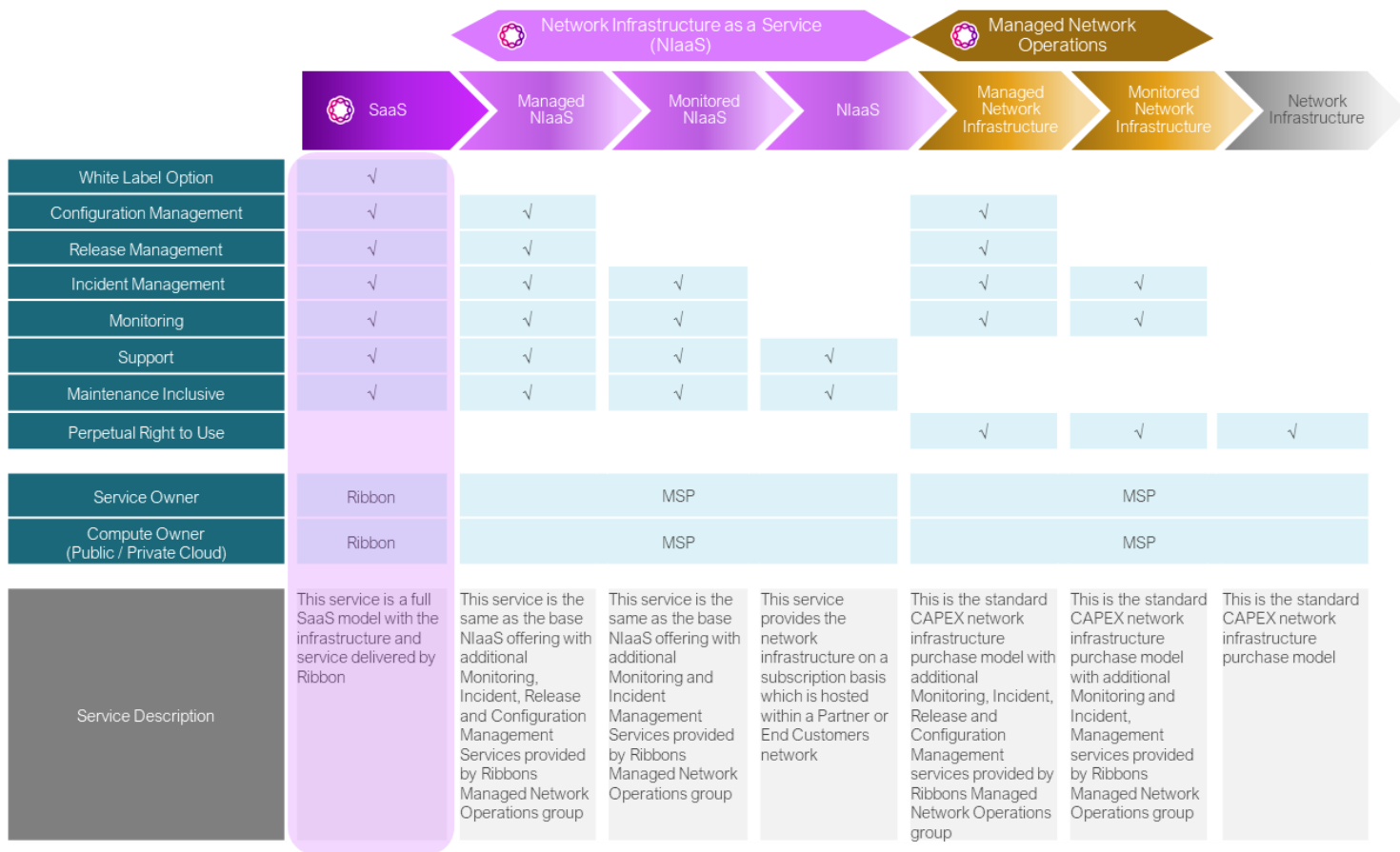

	SaaS	Managed NIaaS	Monitored NIaaS	NIaaS	Managed Network Infrastructure	Monitored Network Infrastructure	Network Infrastructure
White Label Option	√						
Configuration Management	√	√			√		
Release Management	√	√			√		
Incident Management	√	√	√		√	√	
Monitoring	√	√	√		√	√	
Support	√	√	√	√			
Maintenance Inclusive	√	√	√	√			
Perpetual Right to Use					√	√	√
Service Owner	Ribbon	MSP			MSP		
Compute Owner (Public / Private Cloud)	Ribbon	MSP			MSP		
Service Description	This service is a full SaaS model with the infrastructure and service delivered by Ribbon	This service is the same as the base NIaaS offering with additional Monitoring, Incident, Release and Configuration Management Services provided by Ribbons Managed Network Operations group	This service is the same as the base NIaaS offering with additional Monitoring and Incident Management Services provided by Ribbons Managed Network Operations group	This service provides the network infrastructure on a subscription basis which is hosted within a Partner or End Customers network	This is the standard CAPEX network infrastructure purchase model with additional Monitoring, Incident, Release and Configuration Management services provided by Ribbons Managed Network Operations group	This is the standard CAPEX network infrastructure purchase model with additional Monitoring and Incident, Management services provided by Ribbons Managed Network Operations group	This is the standard CAPEX network infrastructure purchase model

Figure 1. SaaS offer

Service Overview

Ribbon Identity Hub is a cloud-native SaaS platform that provides real-time Identity and reputation services. These services are targeted towards service providers who want to mitigate telephony fraud

ribbon

and nuisance calls in their networks. Customers use the Ribbon-defined API to make queries into Identity Hub to use the selected service(s).

Identity Hub services are grouped into the two categories below. Ribbon offers flexible subscription licenses for one or more of these services.

- Reputation Scoring Services
    - Fraud Scoring Standard Service
    - Fraud Scoring Advanced Service
    - Nuisance Scoring Standard Service
    - Nuisance Scoring Advanced Service
- STIR/SHAKEN Services
    - STIR/SHAKEN Authentication Service
    - STIR/SHAKEN Verification Service
    - Certificate Repository (STI-CR) Service

Ribbon Identity Hub services are invoked in real-time by a service provider to get reputation scoring and/or STIR/SHAKEN services, placing it in the call path for each call. Because of this, Ribbon Identity Hub is designed to deliver real-time processing with very low latency in a highly robust and reliable architecture.

Service Subscriptions

Ribbon offers flexible subscription licenses for one or more of these services.

Identity Hub services are sold on an annual subscription, with fees based on the number of transactions per month per service. Customers should estimate their transactions per month and purchase a committed usage of transactions per month to start the subscription service. Any usage above the committed usage is allowed and invoiced at the overage usage rate.

Key points on Identity Hub service subscriptions:

- 12-month subscription term
- Tiered pricing based on monthly usage
- Commit Fee and Overage Fee calculated and invoiced monthly
- Committed usage
    - Customer pays Commit Fee based on committed 'number of requests per month' at the committed usage rate
    - When 'requests per month' is less than committed usage, no additional payment is required, and no refunds are made
- Overage usage
    - If 'requests per month' is over the committed usage, customer pays for the additional requests at the overage usage rate
    - Customer pays for 'actual number of requests made above the committed usage' at Overage usage rate

Ribbon Identity Hub Services Description

Reputation Scoring Services

Reputation Scoring service provides reputation scores and call validation treatment guidance to mitigate telephony fraud, nuisance, and robocalls. Reputation scores are a set of scores representing the likelihood of a call being "bad".

Reputation Scoring supports both Ribbon-defined scoring models as well as customer-requested scoring models to address the fraud, nuisance, or robocall problems in the customer networks. The likelihood of a call being fraud or nuisance is presented with the appropriate value of 'Fraud Score' and 'Nuisance Score' respectively.

Call validation treatment (CVT) policy for the call is based on reputation scores and call parameters. Ribbon Identity Hub can update the caller name display to indicate spam or fraud and send the same along with reputation scores.

Applications querying Identity Hub can implement call validation treatments based on use case. Ribbon's Policy and Routing server (PSX) provides advanced call validation treatment (CVT) options to: route the call as dialed; update caller name display to indicate spam or fraud; route to an alternate termination, such as voice mail; route to voice captcha; or reject the call.

The following Reputation Scoring services are available:

- Fraud Scoring Standard
- Fraud Scoring Advanced
- Nuisance Scoring Standard
- Nuisance Scoring Advanced

Fraud Scoring Standard Service

Fraud Scoring Standard provides a reputation score indicating the likelihood of a call being fraudulent based on Ribbon-supplied fraud databases and STIR/SHAKEN verification outcome. It is a simple to use method for customers to apply the appropriate call treatment to mitigate telephony fraud in their network leveraging Ribbon insights.

Fraud Scoring Advanced Service

Fraud Scoring Advanced provides a reputation score indicating the likelihood of a call being fraudulent based on Ribbon-supplied databases, STIR/SHAKEN verification outcome, in-network fraud insights from Ribbon Analytics, and customer-provided data sources such as allow lists, deny lists, fraud lists, and do-not-originate lists. It provides a more comprehensive mechanism for customers to mitigate telephony fraud in their networks, leveraging all combinations of Ribbon-supplied vs customer-uploaded, automated vs manually created, and in-network vs global data sources.

Nuisance Scoring Standard Service

Nuisance Scoring Standard provides a reputation score indicating the likelihood of a call being a telemarketing or nuisance call based on Ribbon-supplied databases and STIR/SHAKEN verification outcome. It provides a simple to use method for customers to apply the appropriate call treatment to mitigate nuisance calls in their network.

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Nuisance Scoring Advanced Service

Nuisance Scoring Advanced provides a reputation score indicating the likelihood of a call being a nuisance call based on Ribbon-supplied databases, STIR/SHAKEN verification outcome, in-network nuisance insights from Ribbon Analytics, customer-provided data sources such as Allow / Deny lists, and do-not-originate lists. It provides a comprehensive mechanism for customers to mitigate telephony nuisance or spam calls, leveraging all combinations of Ribbon-supplied and customer-uploaded, in-network and global data sources.

STIR/SHAKEN Services

Ribbon Identity Hub provides a complete STIR/SHAKEN-compliant solution with the following services:

- STIR/SHAKEN Authentication Service
- STIR/SHAKEN Verification Service
- Secure Telephone Identity - Certificate Repository (STI-CR) Service

STIR/SHAKEN Authentication Service

Provides signed assertion for a caller's identity. This signed assertion is passed in the SIP Identity header to assert caller identity in the terminating network. The Identity header contains selected call details such as the calling number and a digital signature. The signature is created by a cryptographic signature generation algorithm that uses a private key and hash value. The Signing function includes a Secure Key Store (SKS) which stores the secret private key(s) used to create PASSporT signatures.

STIR/SHAKEN Verification Service

Verifies a call by checking the format and contents of the Identity header and verifying the originating service provider's signature. The Verification Service uses an HTTP or HTTPS interface to the Secure Telephony Identity Certificate Repository (STI-CR) URL that is referenced in the Identity header to retrieve the originating service provider's STIR/SHAKEN public key certificate.

Secure Telephone Identity – Certificate Repository (STI-CR) Service

Hosts STIR/SHAKEN public key certificates used by the terminating service provider's Verification Service to validate signatures. Certificates hosted by this service are available to any terminating peers of the originating customer.

Solution Architecture

Ribbon Identity Hub is a multi-tenant managed Software as a Service (SaaS) platform. As shown in Figure 2. Identity Hub Service Architecture below, it is designed as an open ecosystem, with open APIs and open data integration. At the heart of Identity Hub is flexible 'service broker' functionality that implements a 'Service Graph' which provides the controls to invoke one or many services. This architecture allows multiple services to be provided on single request minimizing call setup delay.

The following services are currently available, additional services will be added over time.

- Reputation Scoring
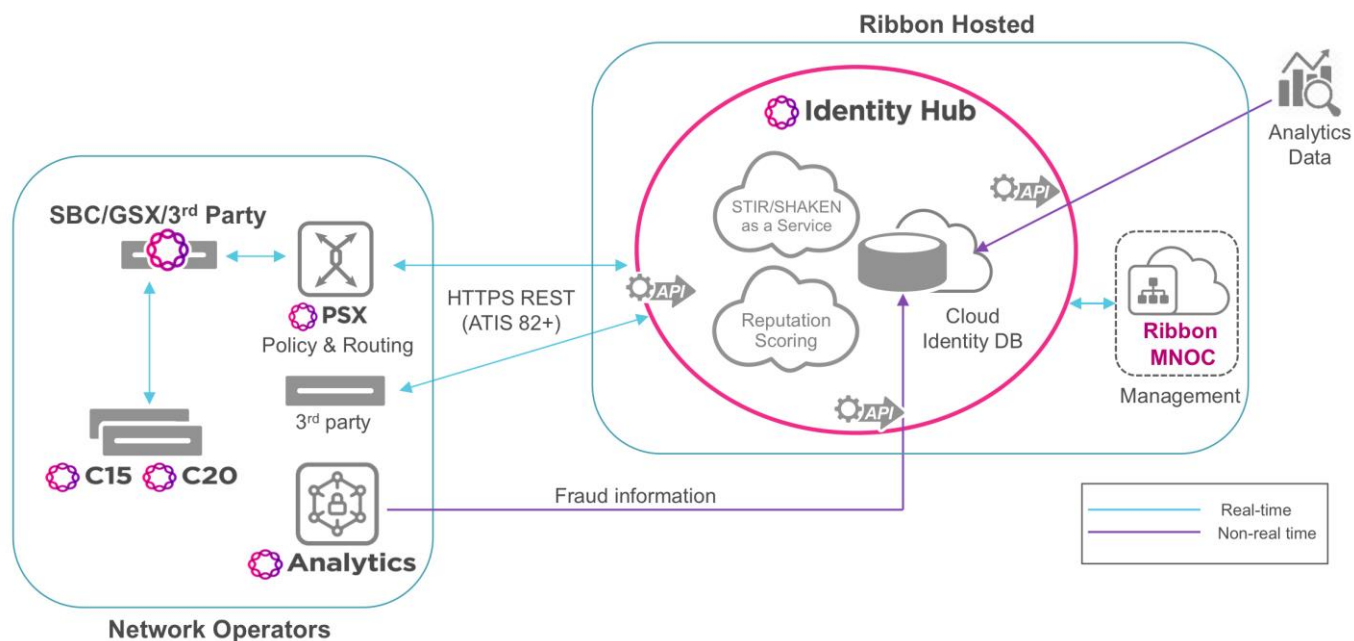- STIR/SHAKEN

Ribbon Identity Hub Services Description

Figure 2. Identity Hub Service Architecture

Ribbon Identity Hub can ingest real-time and non-real time data from other applications or databases to increase the accuracy of the identity assertion modeling. Ribbon Identity Hub will:

- Perform real-time queries of 3rd party transactional policy information, such as real-time attestation of caller identity from Ribbon Secure Telephony Identification (STI) or Calling Name (CNAM) databases
- Collect non-real time, 3rd party policy data which can be crowdsourced, carrier-based, or subscriber provided
- Accept non-real time data on potential robocall and fraud, from Ribbon Analytics, based on analysis of network traffic patterns and Call Detail Records for every call

Ribbon Identity Hub publishes a set of REST APIs to be used by customers for invoking services and/or making configuration changes. Ribbon PSX and third-party applications use the Identity Hub HTTPS REST API to invoke Identity Hub services.

Ribbon Identity Hub receives API requests and executes reputation scoring and call validation policy functions or STIR/SHAKEN signing and verification functions as per the provisioned Service Graph.

Hosting

Ribbon Identity Hub is hosted in a Ribbon-managed AWS cloud environment. The number of Identity Hub instances and AWS regions will be determined and managed by Ribbon.

Initially, Identity Hub is hosted in the AWS US-East and US-West regions. There is a roadmap to deploy in other global AWS regions to ensure proximity to customers.

Ribbon Identity Hub Services Description

Connectivity

Customers can access Ribbon Identity Hub over the public Internet.

Alternatively, customers may connect to Identity Hub from a new or existing customer AWS VPC directly connected to their network. Ribbon will cooperate with the customer in setting up the VPC-based access.

Multi tenancy

Ribbon Identity Hub is multi-tenant service. Access to Ribbon Identity Hub is controlled by unique Tenant-ID and API keys. Each request into the Ribbon Identity Hub control plane or data plane must authenticate with valid tenant credentials.

Security

Ribbon Identity Hub utilizes the following AWS security best practices for secure application deployment:

- Mandatory Encryption (HTTPS) on all external interfaces
- Data encrypted at rest
- Key based authentication for control plane and data plane APIs
- Security groups and access policies to restrict service access

Data privacy

Customer data is logically separated in tenant spaces – customers can only access their own data.

Identity Hub has incorporated privacy principles through privacy by design (PbD) – including implementation of data retention concepts.

Service Management

Service Level Objectives

Ribbon targets the following service level objectives for Identity Hub services. These metrics are computed across all customers over a monthly interval.

Service Availability

Ribbon targets 99.999% availability for Identity Hub services.

The service is available if it can be reached at any of the resolved IP addresses in the advertised FQDNs from locations on the US east and west coasts. Clients are responsible for trying the alternative IP resolutions in a timely manner should a particular IP be unreachable.

Ribbon uses test probes and continuous synthetic traffic to verify continuous service availability.

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Service latency

Ribbon targets < 50ms latency for 99% of responses for STIR/SHAKEN Service, Nuisance Score and Fraud Score Standard services. Services needing external lookups or more processing may have higher latency.

The data service latency is the round-trip time from the request received at our service IP to the response sent from our service IP. This does NOT include latency in the customer network or between the customer network and the service IP.

Defect Rate

Ribbon targets <10 defects per million requests.

Defect rate is the ratio of bad responses to total queries (e.g. defects / million requests) where the response is an error, is incomplete due to an internal service error, or no response is received within 3s.

Service Enablement

Initial Onboarding

Ribbon will perform basic configuration changes on Ribbon Identity Hub to onboard customers and provide default configurations for purchased Identity Hub services. Ribbon will:

- Onboard a customer and provide API keys
- Perform new service onboarding

Ongoing Management

Ribbon will manage and maintain Identity Hub services for optimal performance. Ribbon will:

- Provide API Key recovery
- Define new data sources and services
- Maintain Identity Hub infrastructure and software components

Service Notifications

Customers will be notified of any service events and planned maintenance. All customers will be signed up for notifications as part of their onboarding process.

Customer Responsibility

Customers are responsible for customer specific configuration. Ribbon professional services can be engaged at standard consulting costs should any consultancy be needed. Ribbon does not keep tenant credentials so any tenant specific configuration changes such as Signing Profiles and Service Graph configurations are not the responsibility of the Ribbon.

Roll out of new software releases and features on Identity Hub may necessitate configuration changes and/or software upgrades on customer network elements such as Ribbon's PSX policy server. Customers will be responsible for such configuration changes and software upgrades of customer network elements.

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Configuration support for customer network elements such as Ribbon PSX, SBC, Analytics, or consultancy to build customer specific scoring models will be charged as a separate professional service engagement.

Service Monitoring

Ribbon will provide 24x7 monitoring of the elements that constitute Ribbon Identity Hub. Should an "event" (defined as a change of state that has significance for the management of Ribbon Identity Hub services) occur, Ribbon can detect it using both proactive and reactive monitoring techniques. Ribbon will use:

- Pro-active synthetic calls to test availability and performance of Identity Hub services.
- Polling for specific variables to monitor KPI metrics and thresholds for each element.

SaaS Service Support

Service support to resolve issues related to service outage or degradation is included in the Ribbon Identity Hub subscription services as part of the monthly service fee. This section defines Ribbon's support delivery for Identity Hub services.

24x7 access to Ribbon technical support portal

Following activation of the service and Customer registration for access to the Ribbon support portal, Customer will have 24x7 access to Ribbon technical support. Ribbon's support portal provides technical support information, non-critical service issue support request submission, support case updates and management, and access to Ribbon product and service bulletin notifications. Technical Support case closure is documented in case notes viewable in the Ribbon support portal.

- For prompt Ribbon technical resource assignment and response to non-critical or non-business critical severity issues, Customer should submit non-critical and non-business critical support requests via the Ribbon support portal.
- Customers are recommended to subscribe to 'Identity Hub' WBA to receive notifications on new functionality.

Telephone access to Remote Ribbon Technical Support (RTS) for Support case submission

Critical and business critical priority support requests may be opened 24x7 via phone. RTS response to submitted support cases is prioritized based on a jointly assigned issue severity level. Severity levels are described in Appendix C: RTS Goals – SaaS.

- For critical issues (service outage), RTS resources are engaged immediately when RTS is contacted by phone and will remain remotely engaged to recovery. After service has been satisfactorily restored, Critical support case will be closed. A Major/Minor child case will be opened if Ribbon determines that further investigation or problem resolution activity is required. Furthermore, at its discretion Ribbon may conduct a root-cause analysis of the issue, the results of which will be made available to the Customer upon request.

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Subscription Service Support Fulfillment Process

The Ribbon Subscription Service support program defines Customer and Ribbon obligations as follows:

Customer Obligations:

- All onsite support activities
- Registration for RTS portal login/RTS access
- Initial fault triage and isolation to Ribbon service
- Resolving of known problems by researching existing solutions documented in the RTS portal knowledge base
- Opening of RTS support tickets to request support assistance, via phone if a critical issue or support portal if a non-critical issue
- Collaboration with Ribbon RTS engineers to assist with steps for replication of issues identified to be a service defect or related to a complex usage scenario.
- Providing requested 3rd party log files, and network protocol trace files access to RTS
- Resolution of issues caused by misconfiguration of customer equipment.

Ribbon Support Obligations:

- Accessible 24x7 for support case logging
- Further fault triage and isolation to Ribbon service offers
- Isolate and review of issues through inspection of logs and trace files
- Resolution of technical escalations from Customer
- Providing of case status updates and resolution details to Customer
- Collaboration with Customer for replication of issues identified to be a service defect or related to a complex usage scenario.
- Engage Ribbon engineering and third-party vendors as required
- Document case closure in case notes

Subscription Service Support Program Exclusions

- Any onsite support activity
- Any service which in Ribbon's opinion is required due to external causes to the supported service including, but not limited to, loss due to force majeure events or due to the improper treatment or use of the service
- Any service to resolve problems resulting from third party products not provided by Ribbon
- Root-cause analysis, fault reports, or lead-time/performance metrics unless specifically contracted for these services

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Service Terms

SERVICE TERMS	
General Agreement	Subject to the Customer's payment of the applicable service fees, Ribbon will provide Customer with the purchased Service(s) as described herein. Ribbon Communications Inc. and its subsidiaries ("Ribbon") are the selling entities for the sale of the Service(s) under this service description. The purchase and use of a Service is subject exclusively to the terms and conditions as set out in order of priority in (1) this Service Description, (2) the Subscription Service Usage Terms (which are incorporated by reference and available at https://ribboncommunications.com/company/company-policies/terms/subscription-services-usage-terms) and (3) either the Ribbon Purchase and License Terms agreement at ribboncommunications.com, which is hereby incorporated by reference, or where you have an applicable existing purchase agreement with Ribbon then your existing agreement shall apply. In the event of conflict between the terms and conditions of the documents listed above, the terms and conditions of documents listed at a higher priority shall control and prevail. No other terms and conditions shall apply.
Invoicing Period & Payment	Ribbon shall invoice the Customer monthly for the Service(s), payment due Net 30 from the invoice date. The monthly invoice shall include the following as applicable: - Total Initial Fee is invoiced on receipt of purchase order. - Monthly Commit Fee is invoiced at start of the month, and Overage Usage Fee is invoiced at the end of month on actuals. - Other Professional Services, including any solution enablement services, ordered by Customer pursuant to the Agreement and not previously invoiced upon completion of the Professional Service (except for recurring Professional Services for which payment will be due monthly in advance), or as otherwise agreed in the applicable Professional Service description or as otherwise mutually agreed in writing. - Amounts invoiced are due and payable within thirty (30) days following the date of the invoice, except if otherwise mutually agreed in writing. - The price for the Services purchased by Customer under the Order are as listed in the Ribbon proposal incorporated by reference into the Order (the "Service Rate Plan"). However, if additional Services are selected, then additional pricing and terms may be applicable to such new Services, such as, but not limited to, setup fees.

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Total Initial Fee	The Total Initial Fee includes providing tenant API credentials and assistance with basic service graph provisioning for each service as quoted. All other service graph customizations and professional services will be separately quoted.
Commit Fee	The Commit Fee is the monetary amount, calculated at the beginning of that month based on either (i) the Minimum Monthly Commit multiplied by the applicable Commit Rate or (ii) the Actual Commit multiplied by the applicable Commit Rate. The applicable Commit Fee shall be invoiced monthly
Overage Fee	The Overage Fee, if applicable, shall be invoiced monthly
Actual Usage	Ribbon will calculate the Actual Usage reports with total number of transactions for the Service on a monthly basis. Actual Usage is calculated using internal counters in the service and rounded up to nearest 100K transactions for each Service. Ribbon maintains the transaction records for each transaction and makes available to the customer upon request.

Committed / Overage Pricing	Identity Hub services are sold on an annual subscription, based on aggregate transactions per month per service. Customers need to estimate their monthly transactions per month and purchase a committed 'Number of transactions per month' to start the subscription service. Any usage above the committed usage will be invoiced at overage usage rate.
	
	- Customer Commitment
	    o Minimum purchase commitment of 5 million transactions per month for each Service.
	    o A Customer may increase its transactions commitment for a Service by purchase increments of 100,000 transactions only.
	    o If a customer uses less than the customer's committed level, customer will be billed at the committed level of transactions per month for the service.
	
	- Committed Usage
	
	    o Customer enters annual contract to purchase the committed 'number of transactions per month' for a Service,
	    o If the actual total transactions in a month for a Service is below the committed usage, Customer shall not be entitled to any refund of the Commit Fee

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- Overage Usage

  - If 'transactions in a month' for a Service is over the committed usage, customer agrees to pay the applicable Service fees for the additional transactions at the overage usage rate
  - This Overage Fee is invoiced monthly with the Commit Fee of next month

- Tiered Pricing
  - Identity Hub offers tiered pricing for committed and overage usage. The rate decreases as a customer's monthly usage level advances to the next tier.
  - A customer's total bill is the sum of the cost for usage at the rate of each full tier, plus the cost for the remaining transactions at the rate of the highest tier they reach.

Tier	Marginal Transactions per month
Tier 1	5M - 10M
Tier 2	>10M - 100M
Tier 3	>100M – 500M
Tier 4	>500M – 2B
Tier 5	>2B

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Ordering &

Service Activation

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To order Subscription Services, Customer shall issue a blanket Purchase Order(s) in the amount of the Total Initial Fee(s) and estimated annual usage for the Service Term, or as otherwise may be mutually agreed.

Upon receipt of relevant purchase order and required pre-activation information, the activation of the Service will commence.

For more information on Ribbon Products and Services or to order, please visit:

https://ribboncommunications.com/products/service-provider-products/identity-assurance/ribbon-identity-hub

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<tr><td>**Service Term**</td><td>

Standard Service Term – 12 Months (1 Year) from confirmation of Service activation

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<tr><td>**Termination**</td><td>

- Subject to payment of the applicable Termination Fee, Customer may terminate the Order and any related Purchase Order at any time during the Service Term Period with at least thirty (30) days written notice to Ribbon in accordance with the Agreement. Such termination shall be effective at the end of the month following the notice of termination, unless otherwise mutually agreed in writing by both parties.
- In the event termination of the Order, the Customer shall be liable to Ribbon for payment of the termination fee ("**Termination Fee**")

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	calculated as follows: o Number of remaining months in the Service Term Period times the Monthly Commit plus any Actual Usage True Up Fees that have not yet been invoiced. o Ribbon shall be entitled to invoice Customer upon notice of termination for the Termination Fee.
Unit(s) of Use	Subscription Unit of Use is 100,000 transactions. • Transaction is a request and response pair to the Service REST API. • Ribbon will count the total number of transactions for each Service SKU on a monthly basis.
Service Start Date	Service Start Date is when a Service is activated.
Initial Service Term	Standard Service Term is 12 Months from the Service Start Date
Automatic Renewal	A Service Subscription is automatically renewed at the end of each service term for an additional 12 month service term, except if cancelled by either party by written notice of non-renewal at least sixty (60) days before the start of a next service term. At the time of Service renewal, customer agrees to issue a new Purchase Order for the renewed Subscription Service, or as otherwise may be mutually agreed.
Usage Calculation Period	Service usage is calculated monthly
Minimum Monthly Commit	5 Million Transactions per month for each purchased Service
Service Usage	Customer agrees in the access and use of the Cloud Subscription Service to fully comply with the Ribbon Cloud Services Usage Terms which are available on the Ribbon Communications' website at ribboncommunications.com and hereby incorporated by reference.

Table 1. Service Terms

Restrictions

RIBBON AND ITS AFFILIATES SHALL NOT LIABLE FOR ANY INDIRECT, INCIDENTAL, SPECIAL, CONSEQUENTIAL, EXEMPLARY OR PUNITIVE DAMAGES OR LOST PROFITS, FORESEEABLE OR UNFORESEEABLE, OF ANY KIND (INCLUDING, WITHOUT LIMITATION, LOSS OF GOODWILL, LOST OR DAMAGED DATA OR SOFTWARE, LOSS OF USE OF PRODUCTS, OR DOWNTIME) ARISING FROM THE SALE AND DELIVERY OF HARDWARE AND SOFTWARE PRODUCTS, SERVICES OR ANY OTHER ACT, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. IN ADDITION, THE MAXIMUM LIABILITY OF RIBBON AND ITS AFFILIATES FOR DIRECT DAMAGES, WHETHER BASED ON WARRANTY, CONTRACT, TORT (INCLUDING NEGLIGENCE), PRODUCT LIABILITY OR OTHERWISE, WILL NOT EXCEED THE PRICE PAID FOR THE AFFECTED PRODUCT OR SERVICE IN THE TWELVE (12) MONTHS BEFORE THE CAUSE OF ACTION AROSE. THE FOREGOING LIMITATIONS SHALL APPLY NOTWITHSTANDING THE FAILURE OF ANY EXCLUSIVE REMEDIES. THESE LIMITS OF LIABILITY APPLY TO THE FULLEST EXTENT PERMITTED BY APPLICABLE LAW

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Appendix A: Identity Hub Service SKUs

Plan SKU and Service Onboarding

IDH-SERVICE is the plan base SKU to enable the subscription to any Identity hub service. Customers need to purchase one onboarding SKU per service per customer.

Product Code	Description
IDH-SERVICE	SUBSCRIPTION TO ID HUB SERVICES. ACTUAL SERVICE USED WILL BE INVOICED
IDH-SCR-ONBRD	IDENTITY HUB REPUTATION SCORING ONBOARDING SERVICE FEE; ONE TIME CHARGE PER CUSTOMER PER SERVICE ONBOARDING
IDH-STSH-ONBRD	IDENTITY HUB STIR SHAKEN ONBOARDING SERVICE FEE; ONE TIME CHARGE PER CUSTOMER PER SERVICE ONBOARDING
IDH-CR-ONBRD	IDENTITY HUB STI CERTIFICATE REPOSITORY ONBOARDING SERVICE FEE; ONE TIME CHARGE PER CUSTOMER PER SERVICE ONBOARDING

Reputation Scoring Services

Here are the product codes for Reputation Scoring service subscription.

Fraud Scoring Standard

The Fraud Score Standard subscription provides a fraud score based on Ribbon-provided fraud databases.

Tier	Transactions Per Month	Committed Usage SKU	Overage Usage SKU
Tier -1	Up to 10 Million	IDH-F1-SCR-T1-CMT	IDH-F1-SCR-T1-OVG
Tier -2	Over 10M to 100M	IDH-F1-SCR-T2-CMT	IDH-F1-SCR-T2-OVG
Tier -3	Over 100M to 500M	IDH-F1-SCR-T3-CMT	IDH-F1-SCR-T3-OVG
Tier -4	Over 500M to 2B	IDH-F1-SCR-T4-CMT	IDH-F1-SCR-T4-OVG
Tier -5	Over 2B	IDH-F1-SCR-T5-CMT	IDH-F1-SCR-T5-OVG

Fraud Scoring Advanced

The Fraud Score Advanced subscription provides a fraud score based on Ribbon-provided fraud databases, Ribbon Analytics data and up to four customer specific data sources.

Tier	Transactions Per Month	Committed Usage SKU	Overage Usage SKU
Tier -1	Up to 10 Million	IDH-F2-SCR-T1-CMT	IDH-F2-SCR-T1-OVG
Tier -2	Over 10M to 100M	IDH-F2-SCR-T2-CMT	IDH-F2-SCR-T2-OVG
Tier -3	Over 100M to 500M	IDH-F2-SCR-T3-CMT	IDH-F2-SCR-T3-OVG

Tier -4	Over 500M to 2B	IDH-F2-SCR-T4-CMT	IDH-F2-SCR-T4-OVG
Tier -5	Over 2B	IDH-F2-SCR-T5-CMT	IDH-F2-SCR-T5-OVG

Nuisance Scoring Standard

The Nuisance Score Standard subscription provides a nuisance score based on Ribbon-provided Nuisance databases.

Tier	Transactions Per Month	Committed Usage SKU	Overage Usage SKU
Tier -1	Up to 10 Million	IDH-N1-SCR-T1-CMT	IDH-N1-SCR-T1-OVG
Tier -2	Over 10M to 100M	IDH-N1-SCR-T2-CMT	IDH-N1-SCR-T2-OVG
Tier -3	Over 100M to 500M	IDH-N1-SCR-T3-CMT	IDH-N1-SCR-T3-OVG
Tier -4	Over 500M to 2B	IDH-N1-SCR-T4-CMT	IDH-N1-SCR-T4-OVG
Tier -5	Over 2B	IDH-N1-SCR-T5-CMT	IDH-N1-SCR-T5-OVG

Nuisance Scoring Advanced

The Nuisance Score Advanced subscription provides a nuisance score based on Ribbon-provided nuisance insights, customer Allow / Deny lists, Do Not Originate lists, and data provided from in-network analytics.

Tier	Transactions Per Month	Committed Usage SKU	Overage Usage SKU
Tier -1	Up to 10 Million	IDH-N2-SCR-T1-CMT	IDH-N2-SCR-T1-OVG
Tier -2	Over 10M to 100M	IDH-N2-SCR-T2-CMT	IDH-N2-SCR-T2-OVG
Tier -3	Over 100M to 500M	IDH-N2-SCR-T3-CMT	IDH-N2-SCR-T3-OVG
Tier -4	Over 500M to 2B	IDH-N2-SCR-T4-CMT	IDH-N2-SCR-T4-OVG
Tier -5	Over 2B	IDH-N2-SCR-T5-CMT	IDH-N2-SCR-T5-OVG

STIR/SHAKEN Services

Here are the product codes for STIR/SHAKEN Authentication, Verification, and Certificate Repository service subscription.

Ribbon Identity Hub Services Description

STIR/SHAKEN Authentication and Verification

STIR/SHAKEN Authentication and STIR/SHAKEN Verification services use the same STIR/SHAKEN Transactions SKUs listed below to provide STIR/SHAKEN-compliant signing and verification functionality.

Tier	Transactions Per Month	Committed Usage SKU	Overage Usage SKU
Tier -1	Up to 10 Million	IDH-STSH-T1-CMT	IDH-STSH-T1-OVG
Tier -2	Over 10M to 100M	IDH-STSH-T2-CMT	IDH-STSH-T2-OVG
Tier -3	Over 100M to 500M	IDH-STSH-T3-CMT	IDH-STSH-T3-OVG
Tier -4	Over 500M to 2B	IDH-STSH-T4-CMT	IDH-STSH-T4-OVG
Tier -5	Over 2B	IDH-STSH-T5-CMT	IDH-STSH-T5-OVG

STI Certificate Repository

STI Certificate Repository Service provides STIR/SHAKEN-compliant Certificate Repository.

Tier	Transactions Per Month	Committed Usage SKU	Overage Usage SKU
Tier -1	Up to 10 Million	IDH-STICR-T1-CMT	IDH-STICR-T1-OVG
Tier -2	Over 10M	IDH-STICR-T2-CMT	IDH-STICR-T2-OVG

Appendix B: Identity Hub Billing Examples

Customer Example.com purchases 80M transactions per month for 'Fraud Score Advanced' subscription. The table below explains invoicing for the variable monthly usage.

All SKUs are sold in blocks of 100,000 transactions. For example, 1M transactions will need 10 SKU with 100K transactions each.

Customer will issue the PO for

- 12 months committed usage = (100 @ IDH-F2-SCR-T1-CMT + 700 @ IDH-F2-SCR-T2-CMT) x 12 months +
- IDH-SCR-ONBRD onboarding fee for Reputation Scoring service

Customer will be invoiced monthly after service activation

- Committed Usage = 100 @ IDH-F2-SCR-T1-CMT + 700 @ IDH-F2-SCR-T2-CMT at the start of each month
- Overage Usage is invoiced in the following month based on actuals
- Service Onboarding fee(s) invoiced on Subscription Activation (one time only)

Month	Actual Monthly Usage	Committed Usage	Overage (above committed)	Invoicing
Signed Order Form (Optional PO)		Total: 80M (100 @ IDH-F2-SCR-T1-CMT + 700 @ IDH-F2-SCR-T2-CMT) x 12 months committed usage + IDH-SCR-ONBRD		0
Subscription Activation				Invoice Onboarding + First month committed usage
Month 1	60M	80M Transactions 100 * IDH-F2-SCR-T1-CMT + 700 * IDH-F2-SCR-T2-CMT	0	Invoice current month overages + Next month committed usage
Month 2	70M	Same as above	0	Same as above
Month 3	80M	Same as above	0	Same as above
Month 4	75M	Same as above	0	Same as above

Month 5	90M	Same as above	10M Transactions 100 * IDH-F2-SCR-T2-OVG	Same as above
Month 6	80M	Same as above	0	Same as above
Month 7	75M	Same as above	0	Same as above
Month 8	110M	Same as above	30M Transactions 200 * IDH-F2-SCR-T2-OVG + 100 * IDH-F2-SCR-T3-OVG	Same as above
Month 9	90M	Same as above	10M Transactions 100 * IDH-F2-SCR-T2-OVG	Same as above
Month 10	70M	Same as above	0	Same as above
Month 11	80M	Same as above	0	Same as above
Month 12	70M	Same as above	0	Invoice current month overages + Next month committed usage if subscription renewed.

Appendix C: RTS Goals – SaaS
Availability, Response, Recovery, and Resolution

RTS Goals

Service technical support is for resolution of issues related to service outage or degradation is included in the Ribbon Identity Hub subscription services as part of the monthly service fee. Ribbon will make all reasonable effort to respond to remote technical support requests per the performance goals set forth below.

These goals are established within Ribbon as metrics within Ribbon Quality Management System TL9000 and ISO 27001 compliant processes.

Note: Ribbon's failure to adhere to the goals stated in a specific support instance will not constitute a breach by Ribbon. Listed goals are for informational purposes only and subject to change at Ribbon's discretion.

Ribbon Severity Level	24x7 Phone Availability	Web Response	Recovery	Resolution
Critical Service outage or situation that creates an imminent service outage which requires immediate corrective action.	95% of calls answered within 10 minutes. Emergency Response team engaged immediately.	Not Applicable – Report by Phone	Recovery in 90% of cases within 4 hours from Ribbon notification of incident.	If further action required following Recovery, a Major severity case is opened.
Business Critical Problems that result in a major degradation of service performance that impacts service quality or significantly impairs network operator control or operational effectiveness with Major impact to business operations.	95% of calls answered within 10 minutes.	< 2 Hours	Not Applicable	80% of cases resolved in 5 days or less.
Major Problems that result in conditions that significantly degrade service delivery.	95% of calls answered within 10 minutes.	< 4 Hours	Not Applicable	80% of cases resolved in 15 days or less.
Minor Problems that do not significantly impair the functionality of the service	95% of calls answered within 10 minutes.	Next Business Day	Not Applicable	80% of cases resolved in 30 days or less.

Ribbon Identity Hub Services Description

"**Severity Level**" A Defect which is classified based upon TL9000 guidelines regarding system impact.

"**Response**" means the time commencing upon Ribbon's receipt of a service request by the method required for the applicable defined Severity Level and ending when an engineer is assigned to the support case and acknowledgement of the request has been published.

"**Recovery of Critical Severities**" means the time-period commencing after the applicable Response Time period and ending when service is restored or when a temporary fix or solution recommendation is provided to restore the Service to the previously existing level of functionality.

- Recovery Time expressly excludes time spent waiting on Customer required information, Force Majeure event(s), etc.

- In circumstances where service restoration or solution recommendation is deemed to be at risk within the recovery goal time-period, such issues will be managed transparently by Ribbon with the Customer. Ribbon will identify all such support request cases and escalate to senior Ribbon support services and Ribbon R&D management.

"**Resolution**" means that service is restored, a solution recommendation, or action has been provided or the support request case is otherwise closed by Ribbon.

- Should a mutually acceptable solution, or solution recommendation not be possible within the case closure time-period goal, such issues will be managed transparently by Ribbon with the Customer and Ribbon will identify such support request cases to the Customer.

Submitting Support Tickets to RTS

Upon service activation Customers are entitled to open support tickets with RTS for remote technical support assistance to address suspected issues with Ribbon subscription service delivery.

Customer registration for entitled RTS access must be completed prior to submission of an RTS support case ticket via the support portal. Two business days are typically required to complete registration following submission of new login request registration information at

https://ribboncommunications.com/services/Customer-support-login

Ribbon Identity Hub Services Description

The following is required of Customer who is opening a Ribbon service support request ticket:

- Critical severity issues are to be submitted by phone to RTS
- The severity/priority level assigned to tickets submitted to RTS will be agreed upon according to the severity level as described in Appendix A.
- Customer name and contact information
- Active Ribbon subscription service
- Symptoms and description of the problem. If there was any work performed prior to the issue, please provide this information in detail
- Problem severity and impact statement
- Collaboration with RTS personnel following the logging of support assistance request