Net Revenue Retention (NRR)

Metric Standards Document

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Metric Name: Net Revenue Retention

Alternative Metric Name(s): Net Dollar Retention

Net Revenue Retention Overview

Definition: Net Revenue Retention (NRR)

Net Revenue Retention (NRR), also known as **Net Dollar Retention (NDR)**, measures the percentage of recurring revenue retained over a specific period. NRR captures lost revenue due to customer attrition, reduced usage, or decreasing subscription level, offset by increased revenue from existing customers through up-sells, cross-sells, price increases, or increased usage. The term “net” is used because lost revenue is “netted” against expansion revenue.

Business Value and Insights: Net Revenue Retention

Net Revenue Retention (NRR) measures the stability of a SaaS business's revenue as it measured retention on a revenue basis (versus logo count) and also includes future potential growth potential from new customers. SaaS businesses with high NRR are more predictable (safer) and have higher growth potential because either churn is not a significant drain on revenue.

Customer revenue churn and down-sells are the drivers of NRR to the downside, but it can be offset by effectively increasing revenue from existing customers. Companies with higher NRR tend to have lower customer churn levels and healthy expansion revenue from existing customers. NRR is typically greater than 100% but can be less than 100% for companies whose revenue from existing customers is shrinking or they have limited expansion revenue.

Calculation Formula(s): Net Revenue Retention

Calculation Type #1: Cohort Method

The cohort method is the most accurate way to measure NRR and is the preferred approach in most situations. The cohort method compares the recurring revenue of *a specific group of customers* over time, most commonly on an annualized basis. If measured over a year for example, the metric compares the MRR from a year ago, with the MRR of those same customers today. Any new customers acquired over the year are excluded from the calculation.

For this calculation, it's important to use revenue and not bookings, billings, or cash accounting. Monthly Recurring Revenue (MRR) is commonly used for this calculation and is suitable for a wide range of companies. Enterprise SaaS companies with longer contracts and implementation cycles can also use Annual Recurring Revenue (ARR) or Contracted ARR (CARR).

If using CARR, the metric will capture churn that occurs during the implementation cycle.

Data Inputs Required: Net Revenue Retention (Cohort Method)

Data Input #1: MRR by customer at the beginning of the measurement period

Data Input #2: MRR by customer *for the same group of customers* at the end of the measurement period

This data to calculate NRR is typically found on a revenue recognition schedule. If using CARR, that value might be found in the CRM or contract management system.

Formula: Cohort Method

$$\frac{\textit{MRR at the end of accounting period from the cohort of customers at the beginning of the period}}{\textit{MRR from the customers at the beginning of accounting period}}$$

Considerations and Nuances - Net Revenue Retention Cohort Method

The cohort approach is considered more accurate than the formula approach.

The cohort approach does not require separate tracking of Cross-Sells, Up-Sells, or Down-Sells.

Revenue recognition accelerated due to a canceled contract should not be included in the beginning or ending MRR.

Most companies define a “win-back” period of 30 - 90 days. If a churned customer renews within the win-back period, the resulting revenue is counted as a renewal and not a new sale.

Cash accounting can be used by companies that invoice monthly and have a consistent invoice date.

Using CARR for the calculation captures the churn of customers who cancel after signing their contract but before implementation and revenue recognition. Therefore, companies with long implementation cycles will find CARR most useful.

There is some debate over the inclusion of usage-based pricing or overages in the NRR calculation. If variable revenue is significant and included, NRR becomes more of a growth metric than a metric that demonstrates the stability of the revenue stream. Regardless, if variable revenue from usage-based pricing is included in the calculation, it should be clearly identified.

The cohort approach's main drawbacks are:

1. It does not capture the retention performance of recently acquired customers
2. It may not be helpful for a new business with few or no customers older than one year

Calculation Example #1: Net Revenue Retention - Cohort Method

Data Input Variables: Table Format

Customers on 3/1/2021	Beginning MRR March 2021	Ending MRR March 2022
Customer 1	$ 100.00	$ 200.00
Customer 2	$ 200.00	$ 200.00
Customer 3	$ 500.00	$ -
Customer 4	$ 200.00	$ 300.00
Customer 5	$ 1,000.00	$ 1,500.00
Customer 6	$ 300.00	$ 200.00
Customer 7	$ 500.00	$ 900.00
Customer 8	$ 1,200.00	$ 1,200.00
Customer 9	$ 400.00	$ 600.00
Customer 10	$ 600.00	$ -
Total MRR	$ 5,000.00	$ 5,100.00
Net Dollar Retention		102%

Calculation:

$5,100,000
---------- = 102% Net Revenue Retention
$5,000,000

As you can see in the sample calculation, some customers churned, some contracted, and some expanded. The net effect was the retention of 102% of the revenue from the prior year.

Recommended Calculation Timing: Net Revenue Retention - Cohort Method

The time period between the beginning MRR and ending MRR (for the same set of customers) is typically one year.

Using NRR as an annual measurement is the most intuitive and easy to benchmark.

If the calculation period is less than one year, it can be annualized by taking the result to the appropriate power. For example, if measured over a quarter, take the result to the 4th power, and if measured over a month, take the result to the 12th power.

Generally speaking, longer measurement periods yield the best results for long sales-cycle companies with larger annual or multi-year contracts, and shorter measurement periods are a better fit for companies with smaller contract values and shorter sales-cycles.

Regardless of the measurement period, the metric is typically calculated every month on a rolling basis.

Calculation Type #2: **Formula Method**

The formula method divides churn for the period (adjusted for any expansion or contraction revenue) by the beginning revenue for the period. The calculation can use either ARR, CARR, or MRR.

Data Inputs Required: Net Revenue Retention (Formula Method)

Data Input #1: Beginning MRR
Data Input #2: Churned MRR for the period
Data Input #3: Expansion (Up-Sell,Cross-Sell) MRR for the period
Date Input #4: Contraction (Down-Sell) MRR for the period

Churned MRR is from customers who canceled or did not renew in the period.
Expansion MRR is the incremental MRR growth from existing customers (for any reason)
Contraction MRR is the incremental MRR loss from an existing customer (for any reason

Formula: Formula Method

$$\frac{\textit{Beginning ARR - Churned MRR + Expansion MRR - Contraction MRR)}}{\textit{Beginning MRR}} = \textit{NRR}$$

Calculation Example #2: Net Revenue Retention - Formula Method

List of Input Values:

Beginning MRR:	$100,000
Churned MRR in period:	$ 9,000
Expansion MRR in period:	$ 11,000
Contraction MRR in period:	$ 500

Formula

$$\frac{(100{,}000 - \$9{,}000 + \$11{,}000 - \$500)}{\$100{,}000} = 101.5\% \text{ NRR}$$

If the above measurement period were one month, the annualized NRR metric would be:
NRR = $101.5\%^{12}$ or 119.6%.

If the measurement period were one quarter, the annualized NRR would be
NRR = $101.5\%^{4}$ or 106.1%

Recommended Calculation Timing: Net Revenue Retention - Formula Method

The formula method works best for SaaS companies with smaller transaction sizes and shorter sales cycles and is frequently calculated over a month or a quarter. The formula method is more responsive to churn from new customers than is the cohort method.

When used over longer periods, however, the formula method is subject to out of cycle errors (described below). The potential for error increases with the measurement period making the formula method a poor fit for annual measurements.

Nuances To Consider:

#1: Formula Method is best for lower value ACV companies

Formula method is frequently used in lower annual contract value business with higher churn

#2: Formula method is great for high growth businesses

The formula method is also suitable for high-growth businesses where many of the current customers have not been customers for more than one year and are therefore not captured in the cohort approach.

#3: Some churn or expansion may not be related to existing customer segment

The main drawback to the formula method is that some churn (or expansion) that occurs during the measurement period may not be related to customer revenue included in the beginning MRR. This effect can introduce significant errors in the calculation that become more pronounced over extended measurement periods.

Example Error: If a customer's start date was after the beginning MRR calculation date and the customer churned during the period, the retention formula would understate the retention rate

for that period. In subsequent periods, the MRR of the churned customer would be included in the beginning MRR, but the churned revenue would not, thus overstating NRR for that period.

#4: Usage-Based Pricing Models may require the "double back" approach

SaaS companies with most of their revenue derived from usage-based pricing may consider using the ***"double back"*** approach. The metric is calculated using the cohort methodology; however, it uses twelve months of revenue and extends back two years.

Last 12 months (Months 13 - 24) of revenue (from customers who had revenue 24 months ago
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Prior 12 months (Months 1-12) of revenue (from customers who had revenue 24 months ago)

This approach helps mitigate the spike in NRR resulting from the standard ramp-up period for a typical usage-based pricing customer.

Net Revenue Retention - Links to related Standards

Gross Revenue Rentenion: Click here

Annual Recurring Revenue Standard: Click here