

From Zero to Hero: A GraphQL Testing Guide for Developers

Achieving simplified GraphQL testing can be possible if you employ test automation. Read on to find out how Parasoft SOAtest simplifies the creation, management, and orchestration of GraphQL tests.

Testing GraphQL endpoints is as necessary as any other endpoint testing and automated testing is here to lend a hand. Let's explore how to test GraphQL endpoints with test automation!

What Is GraphQL?

GraphQL is a query language for APIs that was developed by Facebook beginning in 2012 to solve a specific problem — with the rise of smartphones and mobile web browsers, using RESTful API calls was slow and inefficient, particularly on mobile networks. Multiple API calls to multiple endpoints took time, often returning either more information than was necessary, or not enough. The large amounts of data that were returned, combined with multiple API calls, resulted in a poor user experience.

When implemented into Facebook's app for iOS in 2015, the tech world saw the advantages of the new technology, resulting in rapid adoption by many leading companies. In 2015, GraphQL was open sourced, and in 2019, the GraphQL Foundation was created to further develop the specification and reference implementations. Though originally designed with mobile computing in mind, implementation has spread to desktop and server computing. Adoption of GraphQL has expanded to include companies and organizations such as GitHub, Pinterest, Intuit, Coursera, and Shopify.

GraphQL vs. Traditional REST APIs

There are many advantages GraphQL can provide over traditional REST API interfaces. While every technology implementation has tradeoffs, GraphQL offers more flexibility in retrieving information. A single, well-written GraphQL query can return information that would require multiple RESTful API calls with HTTP requests. Researchers and developers have found that GraphQL calls return data sets that are over 90% smaller than using RESTful APIs to acquire the same data.

When using a RESTful API to retrieve data, you often have to make multiple API calls to get all the information you're seeking. For instance, if you're logging in to your bank, you first need to get your customer number. Once you have your customer number, you can get your account number. From there, you can get your account balance:

1. Login returns CustomerId
2. CustomerId returns AccountID
3. AccountID returns Balance

There's nothing wrong with REST APIs, but multiple API calls are often slow, data heavy, and inefficient. In the example above, in order to get your bank account balance, you had to build a sequence of three API calls chained together, each a proper request and an entire response defined by the schema. A GraphQL request is leaner and more specific, dealing with only the three values of customer ID, account ID, and balance:

```
query {  
  CustomerId(name:"Joe Cool") {  
    AccountId{  
      Balance  
    }  
  }  
}
```

The example above might look trivial, but it shows how a request that would traditionally be accomplished with three API calls can be accomplished with just one using a GraphQL query. The best part is that it doesn't require reimplementing of your existing functionality.

There are many additional pros and cons between REST and GraphQL, but it's important to note that GraphQL and REST APIs are not mutually exclusive, and the adoption of one does not exclude the other. In fact, the two work quite harmoniously together.

When Should You Use GraphQL?

When deciding whether to use REST APIs or GraphQL, consider the complexity of your data and the flexibility you need in your queries and mutations. If your data is relatively simple and your API requires a well-defined, resource-based interface, REST APIs may be the way to go.

On the other hand, if you have complex data that requires flexible queries and mutations and you want to minimize over-fetching and under-fetching, then GraphQL may be a better fit.

It does require careful design to create GraphQL APIs and queries with the schema and type organization. REST APIs may be easier to design and query since you can separate individual data requests, but they can also take longer to run. Generally speaking, REST APIs are better for very complex queries, while GraphQL queries can offer more optimization and faster operation.

Additionally, if real-time data and multiple API versions are important for your application, GraphQL can provide these benefits, while REST APIs may require more effort to implement. Ultimately, the choice between REST APIs and GraphQL depends on the specific requirements of your project and the tradeoffs you are willing to make.

Use GraphQL when you want to create a simple and efficient interface for consumers that want to leverage your APIs. You may also want to leverage GraphQL to reduce the total traffic exchanged between your frontend and the backend like Facebook did for mobile traffic. If you want to retrieve all relevant data in a single query, GraphQL can do that very well.

Why You Should Write Tests for GraphQL

As with other functional testing, it's important to test GraphQL APIs to ensure that the software's business logic performs correctly. You need to verify that the queries, schemas, and any mutations behave and respond as expected. Writing and running tests helps developers and QA find errors early – before they get to production. It also ensures that you have sufficient test coverage for the API and application

How to Test GraphQL API Implementations

GraphQL is an abstraction layer that exists between the front-end systems and the backend APIs making it essential to do testing. GraphQL queries allow you to access multiple resources in the backend and aggregate that data together into a single meaningful response.



The diagram illustrates the GraphQL workflow in three stages:

- Describe your data:** A GraphQL schema defining a `Project` type with fields `name` (String), `tagline` (String), and `contributors` (User).
- Ask for what you want:** A GraphQL query requesting the `project` with `name` "GraphQL" and `tagline`.
- Get predictable results:** The resulting JSON response containing the `project` object with its `name` and `tagline`.

Backend APIs are typically granular because we want to create new, reusable building blocks for our applications. However, that doesn't directly translate to our user stories or to the actions we want to be able to accomplish from the frontend. GraphQL is a way to simplify the interactions with your backend data by using an interface with schemas that describe the system behavior so you can get efficient data from your APIs.

Each of the GraphQL schemas map to functions. These functions will then make subsequent calls to the backend against your APIs, databases, and any other resources necessary to collect the data that was requested.

The functions will then assemble the necessary data into a response that will maintain the same shape as the request, making it very easy to understand which data is associated to which elements in the request.

Additionally, GraphQL can be set up to call multiple backend services as it assembles its query response. This reduces the total time that a consumer needs to spend navigating through API docs to understand and read what information is available from a call.

Types of Tests

Query Tests

A query test is a request for data from one or more database tables. A query can either be a request for data results, action on the data, or both.

Mutation Tests

A mutation test is a form of testing that modifies specific components of an application's code to see if a testing tool can detect the changes. Mutation testing is typically used to conduct unit tests to see if a software tool can detect code that isn't properly tested or has hidden defects that other testing methods don't catch.

Load Tests

A load test is a type of performance testing that places your application or website under strain that resembles real-world conditions. Without load testing, your software could fail when it really counts. Load testing tools examine how your application performs during normal and high loads.

Security Tests

A security test is a form of testing that uncovers vulnerabilities, risks, and threats in a software application and prevents attacks from hackers. A security test identifies possible weaknesses of the system that could put your application, information, users, or company at risk.

Schema Tests

Schema tests, also called mapping tests, are a form of software testing that validates objects of a front-end application with corresponding database objects. Schema tests are used to find unmapped objects in a database, like tables, views, or columns.

Automated Testing of GraphQL Endpoints

GraphQL is a powerful technology that allows your API consumers to access their information in a more efficient way. To make sure that the experience works the way you intend, you need to validate your GraphQL APIs. This is where test automation comes in.

There are many automation tools available to test your GraphQL APIs. In this case, I'm using Parasoft SOAtest, a widely used API testing solution that simplifies the often daunting challenge of validating your critical APIs across multiple technologies. It supports a wide range of message formats and protocols, including GraphQL.

GraphQL endpoints accept queries as strings and return JSON responses with the query results. This fits nicely with SOAtest, since queries can be made by REST clients to send the queries and validation can be done by existing JSON verification tools.

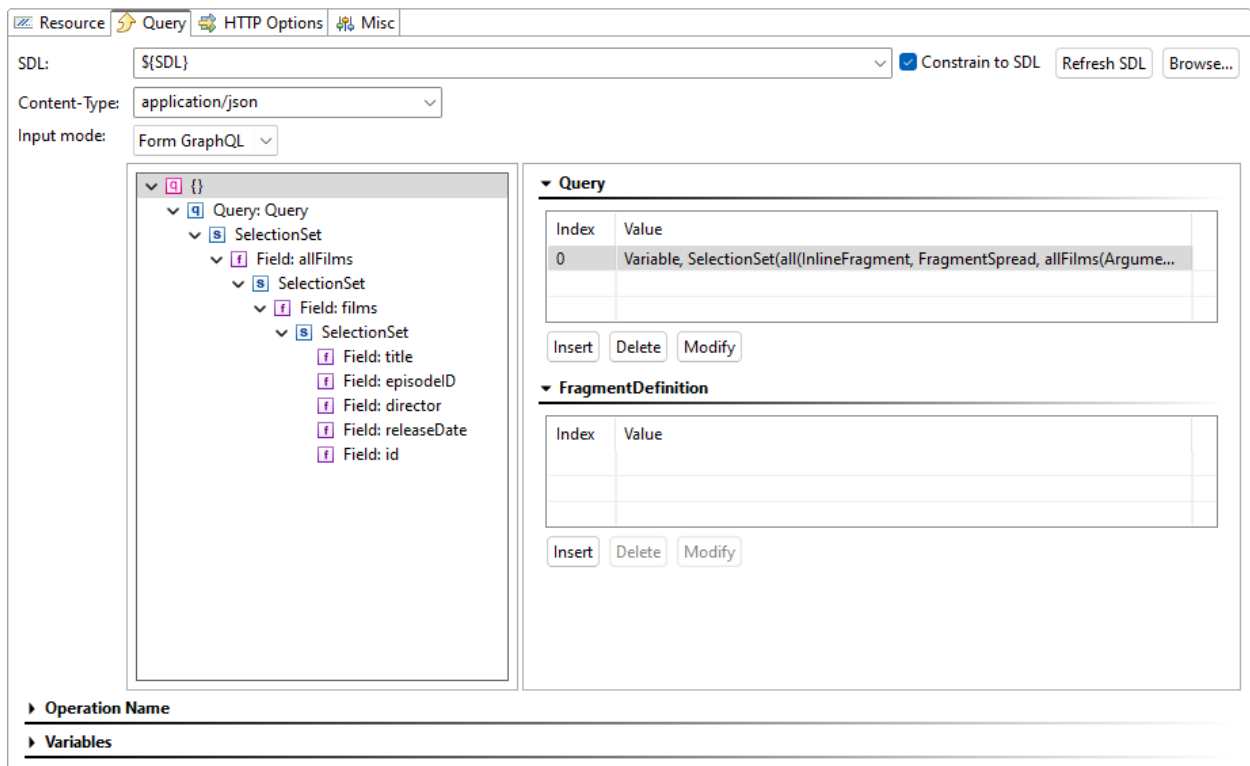
Consider the following simple example GraphQL query.

```
query Query {  
  allFilms {  
    films {  
      title  
      episodeID  
      director  
      releaseDate  
      id  
    }  
  }  
}
```

An expected return would be something like:

```
{
  "data" : {
    "allFilms" : {
      "films" : [
        {
          "title" : "A New Hope",
          "episodeID" : 4,
          "director" : "George Lucas",
          "releaseDate" : "1977-05-25",
          "id" : "ZmlsbXM6MQ=="
        },
        {
          "title" : "The Empire Strikes Back",
          "episodeID" : 5,
          "director" : "Irvin Kershner",
          "releaseDate" : "1980-05-17",
          "id" : "ZmlsbXM6Mg=="
        },
        {
          "title" : "Return of the Jedi",
          "episodeID" : 6,
          "director" : "Richard Marquand",
          "releaseDate" : "1983-05-25",
          "id" : "ZmlsbXM6Mw=="
        },
        {
          "title" : "The Phantom Menace",
          "episodeID" : 1,
          "director" : "George Lucas",
          "releaseDate" : "1999-05-19",
          "id" : "ZmlsbXM6NA=="
        },
        {
          "title" : "Attack of the Clones",
          "episodeID" : 2,
          "director" : "George Lucas",
          "releaseDate" : "2002-05-16",
          "id" : "ZmlsbXM6NQ=="
        },
        {
          "title" : "Revenge of the Sith",
          "episodeID" : 3,
          "director" : "George Lucas",
          "releaseDate" : "2005-05-19",
          "id" : "ZmlsbXM6Ng=="
        }
      ]
    }
  }
}
```

This same query can be created in Parasoft SOAtest via GraphQL Client in Literal or Form mode.



In SOAtest, the GraphQL queries are sent as a string named query. Responses are returned in JSON, which SOAtest is readily able to interpret and represent in its traffic viewer.

Request Response

Header

Response: (747 Bytes) Server response time: 227 ms

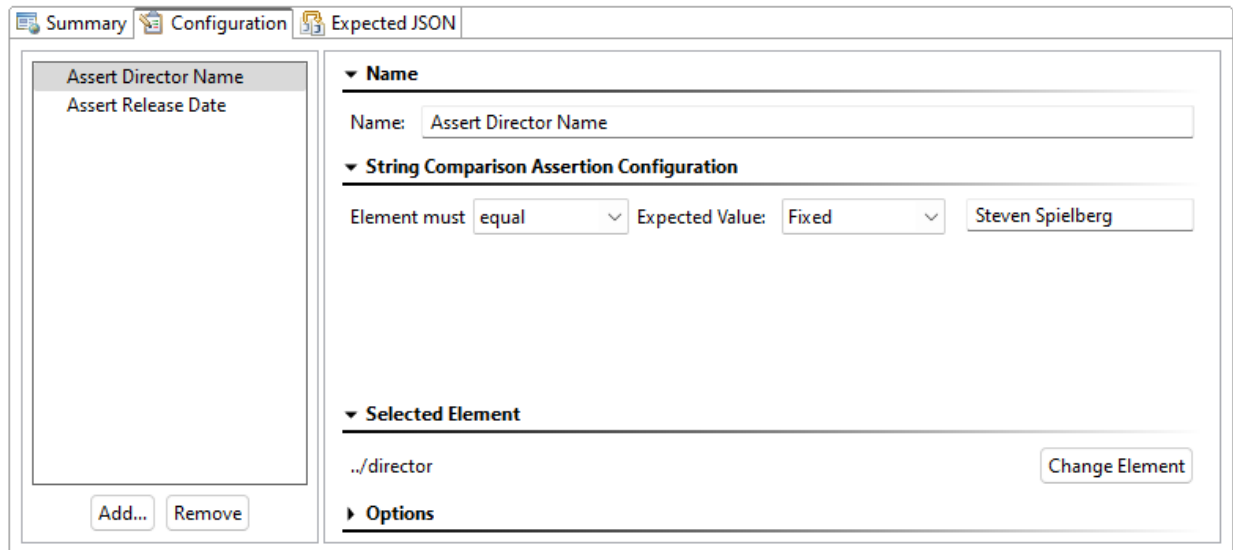
Literal Tree Element

```
1 {
2   "data" : {
3     "allFilms" : {
4       "films" : [
5         {
6           "title" : "A New Hope",
7           "episodeID" : 4,
8           "director" : "George Lucas",
9           "releaseDate" : "1977-05-25",
10          "id" : "ZmlsbXM6MQ=="
11        },
12        {
13          "title" : "The Empire Strikes Back",
14          "episodeID" : 5,
15          "director" : "Irvin Kershner",
16          "releaseDate" : "1980-05-17",
17          "id" : "ZmlsbXM6Mg=="
18        },
19        {
20          "title" : "Return of the Jedi",
21          "episodeID" : 6,
22          "director" : "Richard Marquand",
23          "releaseDate" : "1983-05-25",
24          "id" : "ZmlsbXM6Mw=="
25        },
26        {
27          "title" : "The Phantom Menace",
28          "episodeID" : 1,
29          "director" : "George Lucas",
30          "releaseDate" : "1999-05-19",
31          "id" : "ZmlsbXM6NA=="
32        },
33        {
34          "title" : "Attack of the Clones",
35          "episodeID" : 2,
36          "director" : "George Lucas",
37          "releaseDate" : "2002-05-16",
38          "id" : "ZmlsbXM6NQ=="
39        },
40        {
41          "title" : "Revenge of the Sith",
42          "episodeID" : 3,
43          "director" : "George Lucas",
44          "releaseDate" : "2005-05-19",
45          "id" : "ZmlsbXM6Ng=="
46        }
47      ]
48    }
49  }
50 }
```

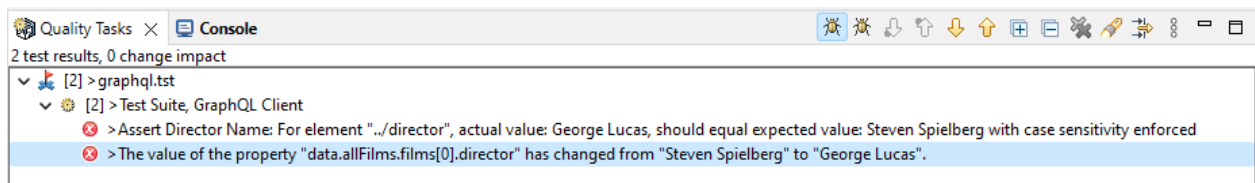

The returned values are expected. We need an automated way to verify these results. The SOAtest JSON assertor comes in handy here.

Verifying GraphQL Responses

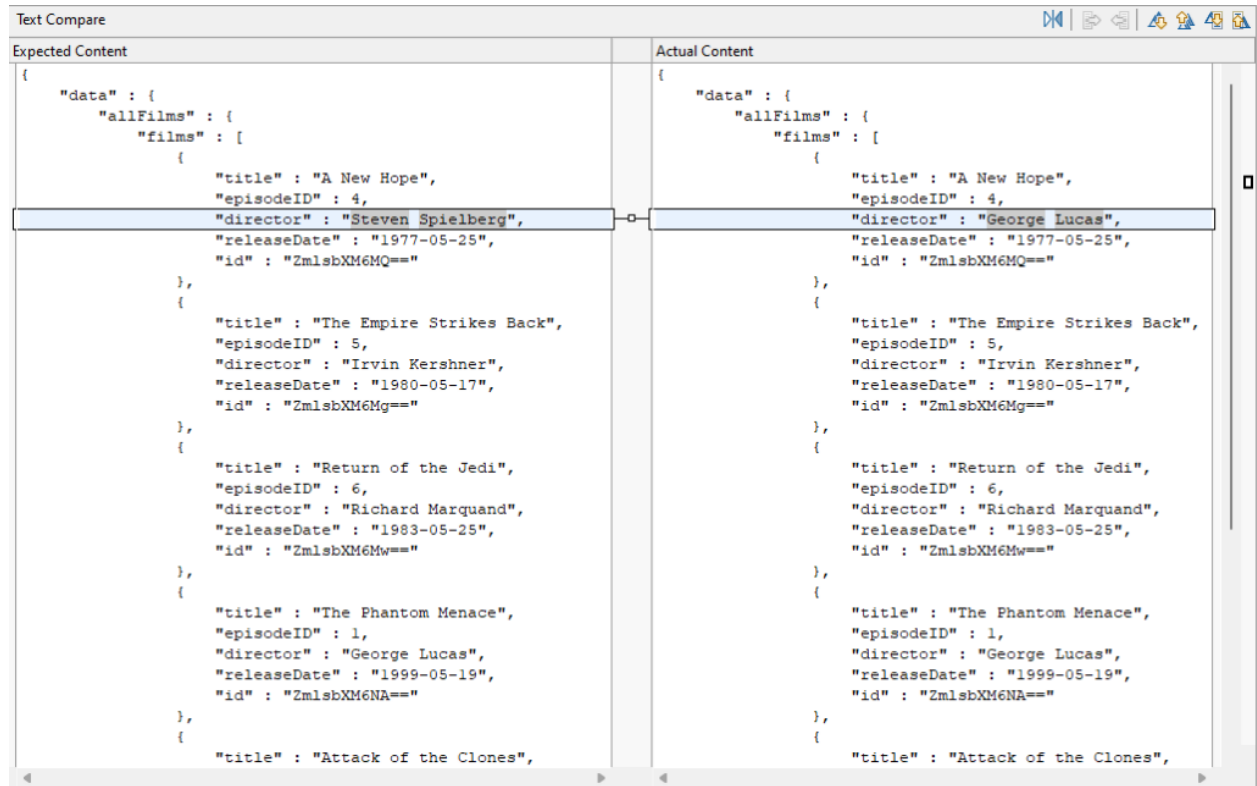
SOAtest verifies JSON responses using assertions that are configured with its JSON assertor tool. Here's an example check to see if the first name returned is a string "Luis" which we know is not a valid value.



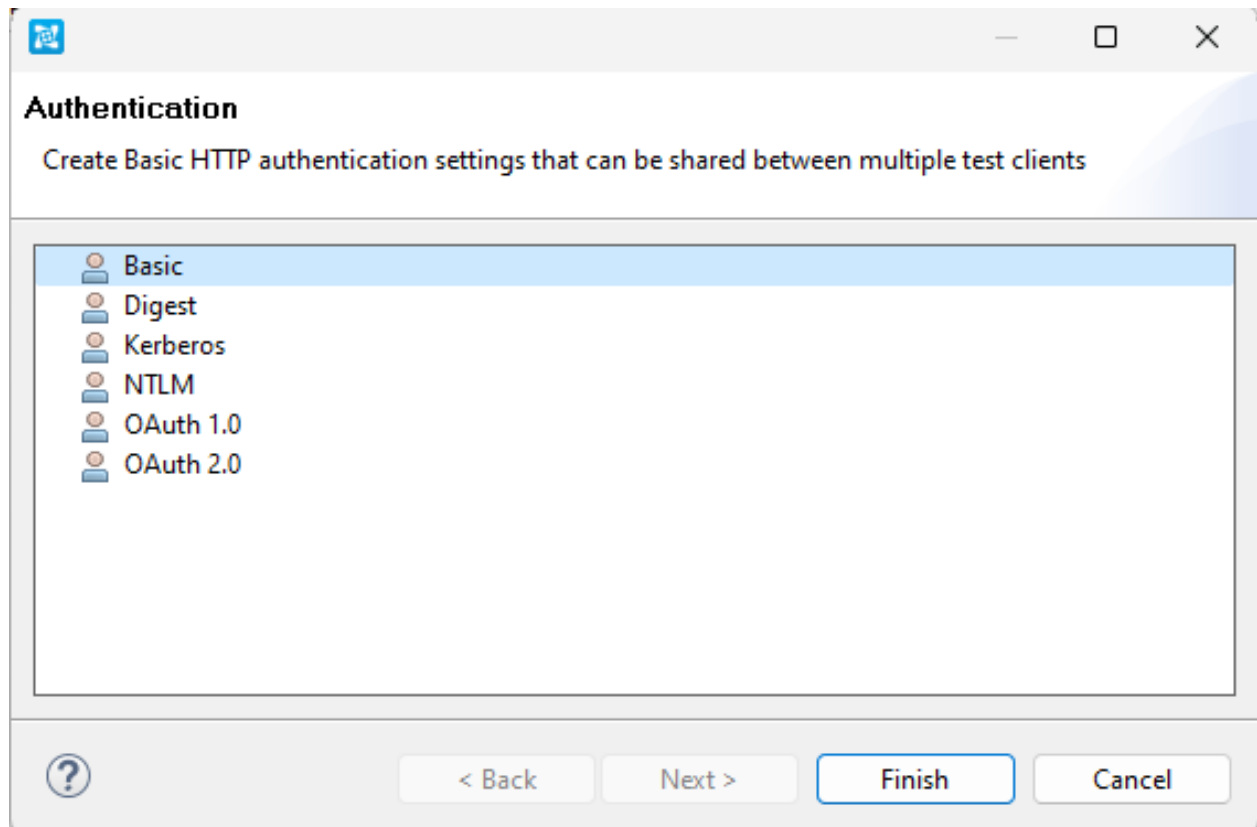
Running the test again, the test fails.



As you can see, the testing of GraphQL is straightforward in SOAtest using already existing capabilities.



What about authentication? This is handled by SOAtest and the existing client authentication tools will work with GraphQL endpoints as well.



Why Parasoft SOAtest for GraphQL Testing?

The benefits that SOAtest brings to REST, SOAP, and other API testing remain the same for GraphQL. Designed to fit into existing testing infrastructure, Parasoft SOAtest accelerates testing that enables Agile development by helping testers work smarter with scriptless testing that facilitates collaboration across dev, test, performance, and security teams.

Parasoft SOAtest makes tests easy to create, manage, orchestrate, run, write, and analyze. Going beyond GraphQL, SOAtest's support for over 120 message formats and protocols plus test generation aided by AI and machine learning is making API testing easier.

Clear to Check Audits

Summary

This job aid outlines the steps for the audit team's review of a Clear to Check Audit.

Key Points

1. The Financial Support Accounting Department sends a weekly Clear to Check Report to the manager.
2. A sample selection of ten from the report is audited.
3. The sample population is determined by dividing the number of items on the report by the number 10.
4. One high dollar check is selected for review from the samples.
5. Checks for \$1,500 and above are excluded from the sample to avoid duplication of the review that is completed through the sign-off process.
6. The manager distributes the audits via email to the staff.

Processing Audits

1. Retrieve the Clear to Check Audit Spreadsheet from the personal email box.
2. Locate the high dollar check for review.
3. Navigate to Lawson and enter the user information.
4. Navigate to **Voucher Deduct Tab > AR90.1**.
 - a. Enter the following information:
 - Company 9
 - Vendor number
 - History - I
 - b. Select filter, then **OK**.
 - c. Enable - Y.
 - d. Enter the amount in whole dollars.
 - e. Select **OK**.
5. Right-click the **SC** field and locate the batch number.
6. Make note of batch number and State Financial Recovery (SFR) representative.
7. Navigate to the **AR33.1** screen and enter the company number and the batch number.
 - a. Click **Update Membership > Claim Information**.
 - b. Navigate to the **AR30.1** screen.
 - c. Enter the company and batch number.
 - d. Click **Check Widget > Open Payment**.
 - e. Click **Closed Payment**.
 - f. Select **Payment Amount > Inquiry**.
8. Retrieve the claim image to verify that the reason for returning the money to the provider is valid.
9. Navigate to **PMHS > AP0082** to verify if the vendor has any outstanding AR.
 - a. Enter the Vendor number.

- b. Enter Company number 04.
 - c. Click **Change Mode** three times.
10. Navigate to **Facets > Claims Inquiry > ITS-Web**.
- a. Enter the Claim ID and select **Search**.
 - b. Under **Related Claims**, select the adjusted claim.
 - c. Select **Attachment/Memo/Notes** to view notes.
 - d. Navigate to **Applications > Accounting > Payment Reductions**.
 - e. Press **Ctrl+O** and enter the Claim ID.
 - f. Check **Payment Reduction** screen to confirm that no balance remains before clearing the check.
11. Enter the complete audit in the Claims Quality Database.

Sending New Facets Group Information to Health Equity/WageWorks

This procedure describes how to send new COBRA-compliant groups to Health Equity/WageWorks.

Key Points

1. This procedure is performed by Membership Specialists in the COBRA unit.
2. This procedure applies to 51+, Large, Balance Funded and Small Group lines of business. This does not apply to Administrative Services Only (ASO) lines of business.
3. Groups with fewer than 20 employees are not eligible for COBRA. They are considered State Continuation based on state guidelines.
4. Groups with more than 20 employees must comply with COBRA.
5. If a group elects to use Health Equity/WageWorks, Blue Cross NC's business partner for COBRA administration, Blue Cross NC sends the group's demographic information and initial rates to Health Equity/WageWorks.
6. There are three scenarios for groups that will require this procedure:
 - a. A new COBRA-compliant group.
 - b. An existing COBRA-compliant group that has elected to use Health Equity/WageWorks as their COBRA administrator.
 - c. An existing group that now has over 20 employees and has elected to use Health Equity/WageWorks as their COBRA administrator.
7. Blue Cross NC only sends rates on new groups. When groups renew or otherwise receive a rate adjustment, that group is responsible for communicating their renewal rates to Health Equity/WageWorks.
8. A query runs each Tuesday evening to identify COBRA-compliant groups that have a new COBRA arrangement.
9. The query identifies new groups to be sent to Health Equity/WageWorks by comparing the group's status check notes and the **COBRA Arrangement** field of the latest contract under **Policy Information/Miscellaneous** tab located in Facets.

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Review Active Group Query

1. Retrieve the Active Report MEM001.
 - A. Navigate to **Business Objects > Folder > Public Folders > Facets > Membership**.
 - B. The subject line will be **MEM001 WageWorks Facet Active Group**.
2. Create a folder using the date of the file at **J:\Group Membership\COBRA Team\COBRA Admin with HEQ_WageWorks\Active Groups\[YEAR]\[MONTH]\[DD_MM_YYYY]**.
3. Open the file and review the number of groups identified.
4. Save the file that was created as original in the folder you created.

Create an Active Group Document to Send to Health Equity/WageWorks

1. Format the file.
 - A. Remove blank rows.
 - B. Remove the Blue Cross NC logo.
 - C. Remove run date line(s).
 - D. Remove duplicate groups or accounts.
2. Review the groups listed on the report to the **Monthly Fee** invoice from Health Equity/WageWorks.
 - A. Remove any groups listed on the **Monthly Fee** invoice.
 - B. For any group adding a new line of business (Blue 20/20 Vision, Dental or Medical), check the **Monthly Fee** invoice to make sure the group is currently set up with the Health Equity/WageWorks system.
 - 1) Existing groups adding new lines of business should communicate directly to Health Equity/WageWorks.
 - C. Use the following table:

| If | Then |
|---------------------------|--|
| Employee count is over 20 | <ol style="list-style-type: none">1. Send the group to Health Equity/WageWorks.2. Continue to start the mail merge. |

| | |
|---|---|
| Employee count is 20 or less | <ol style="list-style-type: none"> 1. Review the most current employee count on the indicative screen. If less than 20, the group is not COBRA-compliant. 2. Do not send to Health Equity/WageWorks. |
| The group is medium/large (greater than 50 members) | <ol style="list-style-type: none"> 1. View the most recent group application to determine the correct employee count. Correct the employee count and COBRA Agreement fields as needed. 2. For groups with an employee count greater than 20 that have elected to use Health Equity/WageWorks as their COBRA administrator, continue to start the mail merge. |
| The group is a small group (50 members or fewer) | <ol style="list-style-type: none"> 1. Contact the producer or account manager to find out the current employee count. Correct the employee count and COBRA Arrangement fields as needed. 2. For groups with an employee count greater than 20 that have elected to use Health Equity/WageWorks as their COBRA administrator, continue to start the mail merge. |

- D. Navigate to the following file and open as Read Only:
J:\Group Membership\COBRA Team\Cobra Admin with HEQ_WageWorks\Facets NewCOBRAMailMergeMaster.doc.

This will create the file to send to Health Equity/WageWorks for groups.

- E. Navigate to **Mailing > Start Mail Merge**.

- 1) Follow the prompts in the Mail Merge Wizard.
 - a. Select the file saved in Review Active Group Query.
 - b. Complete the mail merge.
 - c. Select **Edit individual letters**.
 - d. Click **Select All** in the dialogue box, then click **OK**.
- 2) Prepare to save the file:
 - The destination is the folder created in Review Active Group Query.

- When the Save As window opens, navigate to **Tools > General Options** and uncheck the **Read-only recommended** box.
- Save the file as **WageWorks Facets Active Groups [MM-DD-YYYY]**.


Retrieve Rates

1. Include the rates in the document submitted to Health Equity/WageWorks.

A. For Small Groups (up to 50 members):

- 1) Navigate to **The Zone > Applications > BlueQuote** to get the rate.
- 2) Take a screenshot of the rates and paste into the template below the demographic information.

Note: In the screenshot, include the Blue Cross NC logo, the **Prepared For** section, and the details of the quote. See the example below.

|  BlueCross BlueShield of North Carolina | | | | | | |
|---|--|-------------------|--|-------------------|-------------------|--|
| Prepared For: | Contact: | | | | Region: | |
| | Group Name: | | | | County: | |
| | Prospect #: | | | | Phone: | |
| | Address: | | | | EIN: | |
| Blue Options Bronze 8700 D | | | Composite Rated Alternate Quote | | | |
| Metallic Level: Bronze | | | Rates and benefits based on an effective date of 11/2022 | | | |
| Quote #: [REDACTED] | | | | | | |
| Health Plan | Employee Only | Employee / Spouse | Employee / Children | Family | Grand Total | |
| Number of Enrolled Employees | 8 | 2 | 1 | 1 | 12 | |
| Blue Options (PB91029) | \$574.50 | \$1,149.00 | \$1,062.83 | \$1,780.95 | | |
| Est. Medical Monthly Premium | \$4,596.00 | \$2,298.00 | \$1,062.83 | \$1,780.95 | \$9,737.78 | |
| | Est. Employer Premium Contribution Employee Only (@100%) | | | | \$6,894.00 | |
| | Est. Employer Premium Contribution Employee Only (@50%) | | | | \$3,447.00 | |

B. For Medium and Large Groups (more than 51 members):

- 1) Navigate to **J:\Group Membership\NBAdd.ChangeMailbox\[YEAR]\[MONTH]\[Group Name]**.

- 2) Open the Rate Exhibit File (Excel spreadsheet).
- 3) Capture a screenshot of the quote, including rate information, and paste the screenshot below the demographic information in the template.

- The screenshot should include the Business Name, the Blue Cross NC logo, and the Current Rates (including Commissions).
- If there is an agent, include the Renewal Rate (w/ Agent Fees).

| BlueCross BlueShield of North Carolina | | Medical Benefits Overview Blue Cross Blue Shield of NC Fully Insured Proposal | |
|---|--------------------------|---|----------|
| Renewal Rates (including Agent Fees) (6/1/23 - 5/31/24) | | | |
| | Blue Options | Blue Options HSA | |
| Deductible | | | |
| In-Network (Ind / Fam) | \$5,000 / \$10,000 | \$2,500 / \$5,000 | |
| Out-of-Network (Ind / Fam) | \$10,000 / \$20,000 | \$5,000 / \$10,000 | |
| OOP Maximum | | | |
| In-Network (Ind / Fam) | \$9,100 / \$18,200 | \$5,000 / \$10,000 | |
| Out-of-Network (Ind / Fam) | \$18,200 / \$36,400 | \$10,000 / \$20,000 | |
| Coinsurance | | | |
| In-Network | 10% | 10% | |
| Out-of-Network | 40% | 40% | |
| Physician Office Visit | | | |
| In-Network (PCP/SPC) | \$25 / \$50 | D&C | |
| Preventive Care | Covered at 100% | Covered at 100% | |
| IN Urgent Care | \$50 | D&C | |
| Hospital Copay | | | |
| Per Admission (IN / OON) | - / - | - / - | |
| Emergency Room | | | |
| ER | \$500 | 10% | |
| Prescription Drugs | | | |
| Retail | \$20 / \$40 / \$75 / 25% | 10% | |
| Number of Employees | | | |
| Employee Only | 37 | 36 | 1 |
| Employee Spouse | 2 | 2 | 0 |
| Employee Children | 2 | 2 | 0 |
| Family | 2 | 1 | 1 |
| Total | 43 | 41 | 2 |
| Current Rates (including Commissions) | | | |
| | Blue Options - Quote # | Blue Options - Combo # | |
| Employee Only | \$527.61 | \$491.11 | |
| Employee Spouse | \$1,055.21 | \$982.22 | |
| Employee Children | \$976.06 | \$908.53 | |
| Family | \$1,635.58 | \$1,522.42 | |
| Total Monthly Cost | \$24,692 | \$23,014 | |
| Total Annual Cost | \$296,305 | \$276,162 | |
| Total | | \$320,467 | |

- 4) In the same folder – **J:\Group Membership\NAdd.ChangeMailbox\[YEAR]\[MONTH]\[Group Name]** – open the most recent application (PDF).
- 5) Take a screenshot of the **Probationary Period** and **Domestic Partnership** sections of the application and paste below the screenshot of the rate quote.

ORIENTATION / PROBATIONARY ELIGIBILITY PERIOD FOR NEW HIRES ONLY:

10a. **Health, Dental, Vision:**

1st of the month following 30 days 0 day, effective on date of hire (only for groups of 6+)

Next day following 30 days 0 day, effective 1st of the month following the date of hire (only for groups of 6+)

1st of the month following 60 days Self-funded Groups Only:

Next day following 60 days (51+): Other _____

Next day following 90 days (not greater than 90 days)

10b. At the time of the Group's initial enrollment with Blue Cross NC, will all employees be enrolled as of the effective date of the group or should the probationary period apply?

All Probationary Period

11. **Choose one of the following to be applicable to employees terminating coverage:**

End of the contract month following employment termination

Last day of employment (only available to groups of 6 or more eligible employees)

Application Continued on Next Page Page 2 of 8

Group Name: _____

12a. **Domestic Partner Coverage Options** (check all that apply): None Same Gender Opposite Gender

2. Save the document in the folder created in the Review Reinstated Groups Query section.
3. Create a PDF of the document.

Send Files to Health Equity/WageWorks

1. Submit the PDF file to Health Equity/WageWorks.
 - A. Email the Health Groups file to carriersalessubmission@wageworks.com and copy the Senior Partner Relationship Manager at Health Equity/WageWorks, and the Senior Vendor Manager and Vendor Service Delivery Manager at Blue Cross NC.

Note: Contact list is provided by Health Equity/WageWorks.

- B. For the Subject line, enter **Blue Cross of NC – Active Groups**.
- C. For the body of the email, enter the following:

Please find attached a PDF document named WageWorks Active Groups. The group's effective dates are listed in the attached document. They are also listed below.

[Group Names] [Effective Dates]

- D. Attach the file to the email and send.
2. Add a note indicating when the group was sent to Health Equity/WageWorks.

Update the Master File

1. For active groups:
 - A. Using the file of active groups sent to Health Equity/WageWorks, copy and paste the groups sent to Health Equity/WageWorks into the **Active Groups Master List** in the **Active Groups** folder.
 - B. Add the date the groups were sent following the format established in the file.
2. For canceled groups:
 - A. Using the file of canceled groups sent to Health Equity/WageWorks, copy and paste the groups sent to Health Equity/WageWorks into the appropriate year's file in the **State Continuation, Life Only, Termed and Opted out Groups** folder.
 - B. Add the date the groups were sent following the format established in the file.
3. For reinstated groups:

- A. Using the file of reinstated groups sent to Health Equity/WageWorks, copy and paste the groups into the **Master List of Group Reinstates Sent to WageWorks** in the **Reinstated Groups** folder.
- B. Add the date the groups were sent following the format established in the file.

IPP Host Appeal Response

Summary

This procedure describes how to work a Claim Appeal Response received from the Home Plan.

Key Points

1. Claim Appeal Misroutes may also be received through this Workflow queue.

Required Applications

1. You will need the following applications to complete this process.
 - PlanConnexion
 - Nuxeo
 - Document Workflow
 - Provider Correspondence Tool

Select Work Item

In Document Workflow:

1. Select **Host AppealsB2** from Work Area drop-down menu.
2. Select **Get Next**.
3. Select a work item.
4. Copy SCCF or Blue2 Message ID from Properties Pane and transfer to **PlanConnexion**.

Locate the Host Appeal Response

1. Determine if the item is a Host Appeal Response or Appeal Misroute. The SCCF Format in PlanConnexion indicates the message type.

| SCCF Format | Message Type | Action |
|-------------|-----------------|--|
| CLMAPPLM | Appeal misroute | Proceed to the steps to process an appeal misroute . |
| CLMAPPL | Appeal response | Proceed to Determine the Appeal Response Reason steps. |

2. Document comments and select **Complete**.

Process an Appeal Misroute

1. Review CLMAPPL.

| If | Then |
|-----------------------------|--|
| The appeal is applicable | <ol style="list-style-type: none"> a. Refer to IPP Host Appeal Requests (Appeal Steps). b. Upon completion of the appeal, submit the provider letter using the Provider Correspondence Tool with a statement including: <ol style="list-style-type: none"> i. Please note that all provider appeals should be submitted to the local BCBS plan for timely processing. Your appeal was sent to the member's home plan in error. We have received your appeal and [required action to take]. Thank you. |
| If appeal is not applicable | <p>Submit the provider letter using the Provider Correspondence Tool with a statement including:</p> <p>Please note that all provider appeals should be submitted to the local BCBS plan for timely processing. Your appeal was sent to the member's home plan in error. We have received your appeal and [required action to take]. Thank you.</p> |

2. Mark item **Finished** in PX.
3. Document comments in DWF and click **Complete**.

Determine the Appeal Response Reason

| If | Then | | | | | | |
|--|---|------|------|-----|---|----|---|
| The response is Appeal Approved | Verify that a valid adjusted DF is on file. | | | | | | |
| | <table border="1"> <thead> <tr> <th>If</th> <th>Then</th> </tr> </thead> <tbody> <tr> <td>Yes</td> <td> <ol style="list-style-type: none"> 1. Mark Finished in PX. 2. Return to Document Workflow. <ol style="list-style-type: none"> a. Post comments. b. Click Complete. </td> </tr> <tr> <td>No</td> <td> <ol style="list-style-type: none"> 1. Send GENINQ 325 indicating adjusted DF is still outstanding. 2. Place work item on hold 25 days. <p>Note: If there is no resolution after two GENINQ attempts, initiate the escalation process.</p> </td> </tr> </tbody> </table> | If | Then | Yes | <ol style="list-style-type: none"> 1. Mark Finished in PX. 2. Return to Document Workflow. <ol style="list-style-type: none"> a. Post comments. b. Click Complete. | No | <ol style="list-style-type: none"> 1. Send GENINQ 325 indicating adjusted DF is still outstanding. 2. Place work item on hold 25 days. <p>Note: If there is no resolution after two GENINQ attempts, initiate the escalation process.</p> |
| | If | Then | | | | | |
| Yes | <ol style="list-style-type: none"> 1. Mark Finished in PX. 2. Return to Document Workflow. <ol style="list-style-type: none"> a. Post comments. b. Click Complete. | | | | | | |
| No | <ol style="list-style-type: none"> 1. Send GENINQ 325 indicating adjusted DF is still outstanding. 2. Place work item on hold 25 days. <p>Note: If there is no resolution after two GENINQ attempts, initiate the escalation process.</p> | | | | | | |
| | <ol style="list-style-type: none"> 1. Send a letter to the provider using the Provider Correspondence Tool indicating the reason for the denial. 2. Return to PX and mark Finished. 3. Return to Document Workflow. 4. Post comments. 5. Click Complete. | | | | | | |
| The response is Appeal Denied/Ineligible Response | <ol style="list-style-type: none"> 1. Send a letter to the provider using the Provider Correspondence Tool indicating the reason for the denial. 2. Return to PX and mark Finished. 3. Return to Document Workflow. 4. Post comments. 5. Click Complete. | | | | | | |

For Immediate Release
July 29, 2020

iink Endorsements Successfully Tests iink NOW

Boston, MA — iink Endorsements announced today a successful test of the **iink NOW** product introduced in July as a beta product. **iink NOW** is an add on to the **iink Payments** and **iink Professional** products, which gives customers immediate access to their funds while the check is going through the endorsement process.

iink NOW gives contractors the flexibility to immediately access the funds for insurance claim checks with a direct deposit into their bank account without waiting for the check to be endorsed by the other payees and the mortgage company, which means they can start jobs sooner without tapping into their cash reserves. Companies using **iink NOW** can expand their territory, take on more jobs, and expand their business for no more than 3.5% of the value of the check. If the check is repaid in less than 30 days, the cost is only 1%.

“Even if our customers leave their money in the bank, in most cases they’ll generate more revenue in interest than the fee for using **iink NOW**,” said Ryan Holliday, President and CEO of **iink Endorsements**. “But the real beauty of using **iink NOW** is that contractors can take on more jobs without tapping into their cash reserves, so they’re no longer constrained by cashflow on how many jobs they can do at a time. With **iink NOW**, they can pay invoices to suppliers sooner, pay their team, and spend less time chasing down money and more time growing their business.”

iink NOW is the third product that **iink Endorsements** has launched in 2020. The revamped endorsement platforms **iink Payments** and **iink Professional** provide a powerful new dashboard for customers to track their payments, projects, and inspection status from their computer or mobile device.

About iink Endorsements

iink Endorsements was founded in 2017 by Ryan Holliday and Ken Lollar. **iink** believes homeowners and business owners can get their lives back faster after an insured property loss.

iink’s platform automates the homeowner’s claims and endorsements through a management platform. Through key partnerships with insurance, mortgage, and technology experts, **iink** creates a revolutionary, seamless experience for homeowners and contractors. **iink** is continually adding and expanding banking partnerships to reach more customers.

Through **iink**'s ground-breaking management platform, homeowners and business owners can receive their funds after a covered loss in as little as two weeks, a fraction of the time it often takes. "We had a catastrophic fire and our home needed to be rebuilt quickly. The mortgage company initially said they would only send us a third of the insurance money to start and that the whole process would take 6-8 months," said Leslie K, Jacksonville, FL **iink** customer. "We decided to use **iink** and they worked with the mortgage company to release 75% of the money in just two weeks!"

Contact

For inquiries about **iink**'s software or banking partnership opportunities, please contact

Ryan Wetzel
1-833-GOT-IINK, ext. 103
rwetzel@iink.biz

For more information on **iink**'s platform, please visit

<https://iink.biz>

**For Immediate Release
September 4, 2019**

iink Endorsements joins DCU FinTech Innovation Center

Boston, MA — iink Endorsements announced today that it will be joining the Boston-based FinTech Innovation Center, DCU, as one of their distinguished summer cohorts.

This partnership positions **iink** to work closely with leaders in Boston’s FinTech industry, who will provide mentorships, guidance, and advice, as well as networking and connections to key partnerships for further growth of the **iink** platform.

As part of this new relationship, **iink** will have access to a shared workspace environment to encourage collaboration around disrupting the FinTech and InsurTech industries. The focus for **iink** will be on the customer experience and satisfaction as it relates to their core business.

“The current industry process for payments of claims is tedious and slow, which adds unneeded stress and delays to an already emotional and difficult time. We believe our efforts to provide electronic payment and verification solutions to property claims stakeholders will flourish quickly with everyone’s support at the Center,” said Ryan Holliday, Co-Founder and CEO at **iink**.

iink is currently seeking partnerships with mortgage banks and insurance providers to pilot and expand their payment solution technology to a broader audience.

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About DCU FinTech Innovation Center

The DCU FinTech Innovation Center is a nonprofit accelerator program for FinTech startups dedicated to providing seed-stage startups with what they need for success: mentorship, workspace, a professional network, and community.

Contact

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For more information on **iink's** platform, please visit

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Home Security for Seniors

The baby boomer generation, those born between 1946, have reached retirement age, and as a result, are often living alone and staying home more. For many, there are unique challenges and considerations that have to be made regarding health and safety that don't apply to everyone else. With Vivint Home Security, we can help make sure that our senior citizens are protected by offering customized systems to meet their needs.

Home Automation

The power of technology means that so many features of our home can be automated and controlled or monitored with your smartphone or mobile device. New devices include automatic door locks that can be locked and unlocked remotely from an app or with a code, automated window shades, automatic lights and electrical outlets, and new smart thermostats that let you adjust the temperature remotely and schedule times when you're home or away, and adjust the temperature appropriately for those times.

Using home automation, senior citizens can easily and quickly lock down their home with the push of a button, lower the blinds without having to go around the entire house, or double check that they remembered to turn off the lights when they're away. Vivint Home Automation offers the latest technology and is always innovating, so you're sure to always have access to the newest features and breakthroughs in home automation and home security. Additionally, Vivint has created a simple, intuitive, reliable app for your iPhone or Android device, which gives you the flexibility to make sure that your home is secure and safe, and you can be alerted to any events or changes that might require your attention.

Home Security Cameras

Usually, when we talk about security cameras for the home, we are talking about cameras on the outside to monitor and protect your home. But what about the inside of your home? Of course, everyone has seen security cameras in public, from parking garages to banks to shopping centers, but most people don't think about security cameras inside the home. But in some cases, installing security cameras in the home are important and can be very useful. Vivint Security offers complete home monitoring systems unlike any other, including security cameras for both the inside and outside of the home. Discreet, well-designed, security cameras can be installed by experienced, trained professionals to help protect both the inside and outside of your home to provide extra monitoring and peace of mind.

Coupled with Vivint Home Automation Systems, home security cameras with motion detection, infrared capabilities for night recording, two-way talk, and secure cloud-based monitoring means you have the resources available to protect your home and your family.

Remote Monitoring by Family

For many of our older customers, the peace of mind they seek isn't just their own - it's for their family and loved ones, as well. With the powerful mobile app for your iPhone or Android device, you can provide access to other users, allowing them to help monitor your home, safety, and health. With our cloud-based video monitoring services, children or caretakers can check on what's going on in the home and use the two-way chat feature to call out for an elderly loved one and make sure that they are safe and healthy. They can make sure that doors are locked and check on the temperature to make sure everything is working correctly. Or, if you are away and you simply need someone to check on things in your home, you can use smart locks to provide a temporary password for someone to come in and take care of things while you're out, and then simply deactivate the code when you return home. In the event that there is an emergency, children or loved ones who are monitoring your home can use the same app to contact emergency services, making sure that help arrives as quickly as possible.

At different stages in life, your needs will change. Vivint Security understands this, and we create a custom plan to help protect you and your home. For our older citizens, we have specialized plans and features that are designed and developed with you in mind. With Vivint Security, you can protect yourself, your home, and give your family the comfort of knowing that you are safe, healthy, and happy.

Vivint Offers the Best Wireless Security Camera System with Remote Viewing

In our world, online shopping is the way to go. Gone are the days when you had to get in your car and drive to the shopping center. Now, from anywhere, you can shop with your phone, order with just a couple of clicks, and your new purchase is on its way.

And it's not just Amazon orders anymore. There are dozens of new companies - and more popping up all the time - that deliver nearly anything to your doorstep: groceries, food delivery, and in some areas, even wine or beer. So when your doorbell rings, do you know who's there? Is it lunch, or a new pair of shoes? Or maybe it's someone who, despite the "No Soliciting" sign on your door, is there to try to get you to switch your cable subscription. Whether you're home or not, today's wireless technology means you can not only see who is at your door, but communicate with them through a simple app on your smartphone.

Vivint Security has developed a powerful, all-in-one phone app that not only lets you check to make sure your alarm is active, but also view footage from your wireless home security cameras. With remote viewing, you can analyze old footage to download and share as needed, as well as see live activity when your cameras are activated. With some systems, you can even communicate through your doorbell security camera and speak to your visitor, letting them know you'll be there shortly, or where to place your package for safekeeping. Not only can you see when a package is being delivered, but you can also make sure that something isn't being picked up when it shouldn't be. There are stories and videos across the internet of "porch pirates", people who run up to someone's doorstep and steal packages that are delivered. With Vivint wireless security cameras, a doorbell camera, and phone app, you can be alerted when your cameras are activated and see if someone is approaching your house and warn them off or share the video footage with authorities.

But a good security camera system can do more than just protect your online shopping. Are you a parent and want to know when your kids arrive home from school? Are you working from home and want to monitor your kids playing outside while you're on that hour-long Zoom call? With Vivint Security, you can. You can view live events on your phone or tablet anywhere you have an internet connection, so you're aware of everything happening in and around your home, even when you're not there.

Finally, there's the peace of mind that comes with wireless security cameras that connect to your phone, tablet, and computer. Are you home alone? Not expecting a visitor and the doorbell rings? Use a doorbell security camera connected to your mobile device, see who is there, and interact with them from behind a locked door.

Your home is one of your biggest investments, and you have the right to want to monitor and protect it with remote viewing. Keep tabs on what's going on, interact with visitors at the door, and protect your safety with Vivint Security with wireless security cameras that connect to your phone, tablet, or computer. You deserve it.

The Best Smart Tech Tools of 2021: Work From Home Like a Boss

Things have changed over the past year. Now, more than ever, people are working from home with offices temporarily - or permanently - closed. Initially, working from home was a fun novelty, and it was quite pleasant, even joyful, to be able to sit down on your couch or favorite chair with a cup of coffee and a laptop and dive into your emails and get to work. However, over time, many individuals have found that, while comfortable, these working conditions are less than ideal. There's a reason why we have desks, dedicated chairs, and monitor risers at the office - there's a real risk of injury from something as simple as typing on a laptop while sitting on the couch or lying in bed. We have some recommendations to help make your work-from-home experience safer and more productive.

First, set up a dedicated workspace. When you work from home, it's easy to lose the distinction between "work time" and "leisure time". This creates a number of problems: you feel like you're "always on", and fail to turn off the email and computer to relax, clear your mind, and be present with your family; your attention is divided, you don't do your best work; and your anxiety levels increase, as you spend time thinking about everything you "should" be doing instead of leaving work at the office. By having a dedicated space where you do work, you create a boundary - when you're not there, you're not working, and you can focus on other things. In this workspace, there are some essentials. If you're working on just a laptop, get an [adjustable laptop stand](#) to elevate the screen to the proper viewing height. The top of the screen should be at eye level, which helps reduce neck strain. Additionally, we recommend a [bluetooth keyboard](#) and [mouse](#), so that your arms and hands are at the proper angle for typing, reducing the risk of a repetitive stress injury like carpal tunnel syndrome. If you really want to make the investment, consider an [ergonomic keyboard](#). If you're using an additional monitor, use a [riser stand](#) to make sure your screen is at the correct height.

Secondly, minimize distractions. There's a lot going on around your home, such as pets, kids doing distance learning, and all the household chores that are always present, waiting for your attention. Ideally, you will be able to work in a dedicated home office with a door you can close for privacy and some quiet, but that's not an option for everyone. A good way to reduce distractions and increase focus is a good set of [headphones](#) or, for those Zoom meetings, a [headset with a microphone](#) to make your work time more productive. Music services have great playlists curated to help increase focus, and [some headphones](#) have a noise-cancelling feature that blocks out background distractions with white noise or blissful silence.

Finally, use home automation features to keep tabs on your home from your command center, rather than having to get up and walk around to take care of minor tasks. With Vivint Home Automation, you can turn lights on and off, adjust your thermostat, even set blinds to open and close on a schedule or with a simple click on your smartphone. With Vivint Security

Cameras and a doorbell security camera, you can see who is at the door without leaving your desk to know if you need to be interrupted or if you can disregard the visitor at the door. Integrating home automation into your routine means that your work-from-home experience is safer and more productive.

For many people, work from home is a temporary situation; for others, it's the new normal. Whether you are working from home for now, or as a permanent change in your routine, using these tips and integrating home automation tools from Vivint Security will help you succeed and have a happy, healthier work-life balance.

What Are the Best Outdoor Security Cameras?

If you've taken the time to invest in new security cameras for your home or business, you know how helpful and valuable the additional protection and peace of mind are. But depending on where you live, there are different factors to consider to keep your security camera system running at peak performance. Some factors are protection from vandalism, protection from the elements, and maintaining power and a secure connection.

One of the biggest reasons for installing security cameras at your home or place of business is to protect the building, the people, and the property inside. Whether you have set up home security cameras and a doorbell security camera to monitor deliveries, visitors, and to protect your family, or you have installed security cameras around your place of business to make sure that your entrances are secure and there are no trespassers around during the off hours, being able to monitor your property remotely with a smartphone, tablet, or computer and review old video footage is incredibly empowering. But are your security cameras secure? There are several things to think about before you select a security company and have your cameras installed.

Your cameras need to be high enough to have a good field of vision and out of reach for anyone who might try to block or otherwise disrupt the view of the security cameras. Also, you want to make sure that they can't be easily knocked down by trespassers. The location of each security camera is very important, and that's why Vivint Security is the best choice. With decades of experience in the security game, they have the expertise and know-how to ideally place your cameras for the most effect and protection.

Another concern is withstanding the weather and the elements. There is no one-size-fits-all approach to weatherproofing your outdoor security cameras, because different parts of the country have very different climates and weather patterns. Are you in the midwest or northeast? Brutal winters bring punishing cold, ice and snow storms, and strong winds. Similarly, hot, humid summers can also damage the hardware if not properly installed with the correct equipment. Other areas of the United States, such as the south, face more heat and humidity and lots of rain. The southwest is a hot, arid environment, and the requirements for installation will change for each of these ecosystems. To properly protect your investment in security cameras, you need to work with an expert that understands the unique requirements of your area. That's where Vivint Security comes in. Because of the years of experience they have gained and by working with experts all over the country, they can make sure that your security cameras are up to the task of working through the elements.

Protecting your property, whether your home or business or some other area, is a big investment. But by picking the right partner and doing your research, you can make sure that you're protecting your property, your investment, and ensuring you have peace of mind.